

1777 SOUTH HARRISON STREET · PENTHOUSE ONE
TELEPHONE (303) 759-3303 · DENVER, COLORADO 80210

July 7, 1986

Bureau of Land Management
Oil and Gas Office
136 E. South Temple
Salt Lake City, UT 84111

ATTN: Mr. Edgar Guynn

RE: #1-13 Grynberg
Federal
C Sec. 13-37S-23E
San Juan Co., Utah

Dear Mr. Guynn:

This letter is to inform you that Permitco is authorized to act as Agent and to sign documents on behalf of Raymond T. Duncan when necessary for filing County, State, and Federal permits including Onshore Order No. 1, Right-of-Way applications, etc., for the above captioned well.

It should be understood that Permitco is acting as Agent only in those matters stated above and is not responsible for drilling, completion, production, or compliance with regulations.

Raymond T. Duncan agrees to accept full responsibility for operations conducted in order to drill, complete, and produce the above captioned well.

Very truly yours,
RAYMOND T. DUNCAN

W.S. Fallin
Production Manager

kb



July 21, 1986

RECEIVED
JUL 23 1986

State of Utah
Division of Oil, Gas & Mining
4241 State Office Building
Salt Lake City, Utah 84114

**DIVISION OF
OIL, GAS & MINING**

Re: Raymond T. Duncan
Grynberg Federal #1-13
2580' FNL and 2610' FEL
Sec. 13, T37S - R23E
San Juan County, Utah

Gentlemen:

Raymond T. Duncan proposes to drill a well at the above mentioned location.

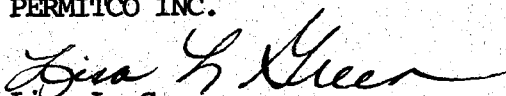
We realize that this location is a non-standard location in accordance with the spacing rules of the State of Utah. This location was chosen based on topography and extensive seismic work done in the immediate area.

Raymond T. Duncan is the lease holder of all of Section 13, T37S - R23E, San Juan County, Utah. Therefore, no other lease holders will be affected by the drilling of the above proposed well.

We, therefore, request your permission to drill this well at a non-standard location.

Sincerely,

PERMITCO INC.


Lisa L. Green
Consultant for
Raymond T. Duncan

cc: Raymond T. Duncan

Permitco Incorporated
A Petroleum Permitting Company

P.O. Box 44065
Denver, Colorado 80201-4065
(303) 322-7878

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

APPLICATION FOR PERMIT TO DRILL, DEEPEN, OR PLUG BACK

1a. TYPE OF WORK DRILL <input checked="" type="checkbox"/> DEEPEN <input type="checkbox"/> PLUG BACK <input type="checkbox"/>		5. LEASE DESIGNATION AND SERIAL NO. U-46825
b. TYPE OF WELL OIL WELL <input type="checkbox"/> GAS WELL <input checked="" type="checkbox"/> OTHER <input type="checkbox"/> SINGLE ZONE <input checked="" type="checkbox"/> MULTIPLE ZONE <input type="checkbox"/>		6. IF INDIAN, ALLOTTEE OR TRIBE NAME N/A
2. NAME OF OPERATOR Raymond T. Duncan 303/759-3303		7. UNIT AGREEMENT NAME N/A
3. ADDRESS OF OPERATOR 1777 S. Harrison St., Penthouse 1 Denver, CO. 80210		8. FARM OR LEASE NAME Grynberg Federal
4. LOCATION OF WELL (Report location clearly and in accordance with any State requirements.) At surface 2580' FNL and 2610' FEL At proposed prod. zone SW NE		9. WELL NO. #1-13
14. DISTANCE IN MILES AND DIRECTION FROM NEAREST TOWN OR POST OFFICE* 18 miles NW of Hatch Trading Post, Utah		10. FIELD AND POOL, OR WILDCAT <input checked="" type="checkbox"/> Wildcat
15. DISTANCE FROM PROPOSED* LOCATION TO NEAREST PROPERTY OR LEASE LINE, FT. (Also to nearest drlg. unit line, if any) 30		11. SEC., T., R., M., OR BLK. AND SURVEY OR AREA Sec. 13, T37S - R23E
16. NO. OF ACRES IN LEASE 1600		12. COUNTY OR PARISH 13. STATE San Juan Utah
17. NO. OF ACRES ASSIGNED TO THIS WELL 40		
18. DISTANCE FROM PROPOSED* LOCATION TO NEAREST WELL, DRILLING, COMPLETED, OR APPLIED FOR, ON THIS LEASE, FT. none		19. PROPOSED DEPTH 6400'
20. ROTARY OR CABLE TOOLS Rotary		
21. ELEVATIONS (Show whether DF, RT, GR, etc.) 5821' GR		22. APPROX. DATE WORK WILL START* August 15, 1986

PROPOSED CASING AND CEMENTING PROGRAM

SIZE OF HOLE	SIZE OF CASING	WEIGHT PER FOOT	SETTING DEPTH	QUANTITY OF CEMENT
17-1/2"	13-3/8"	48#	110'	Cement to Surface
12-1/4"	8-5/8"	24#	2300'	1100 sx or suffic. to circ. to sur
7-7/8"	5-1/2"	15.5#	6400'	400 sx or suffic. to cover zones of interest.

Raymond T. Duncan proposes to drill a well to 6400' to test the Ismay and Desert Creek formations. If productive, casing will be run and the well completed. If dry, the well will be plugged and abandoned as per BLM and State of Utah requirements.

See Onshore Order No. 1 attached.

RECEIVED
JUL 23 1986

DIVISION OF
OIL, GAS & MINING

IN ABOVE SPACE DESCRIBE PROPOSED PROGRAM: If proposal is to deepen or plug back, give data on present productive zone and proposed new productive zone. If proposal is to drill or deepen directionally, give pertinent data on subsurface locations and measured and true vertical depths. Give blowout preventer program, if any.

24. SIGNED John L. Green TITLE Consultant for Raymond T. Duncan DATE 7/21/86

(This space for Federal or State office use)

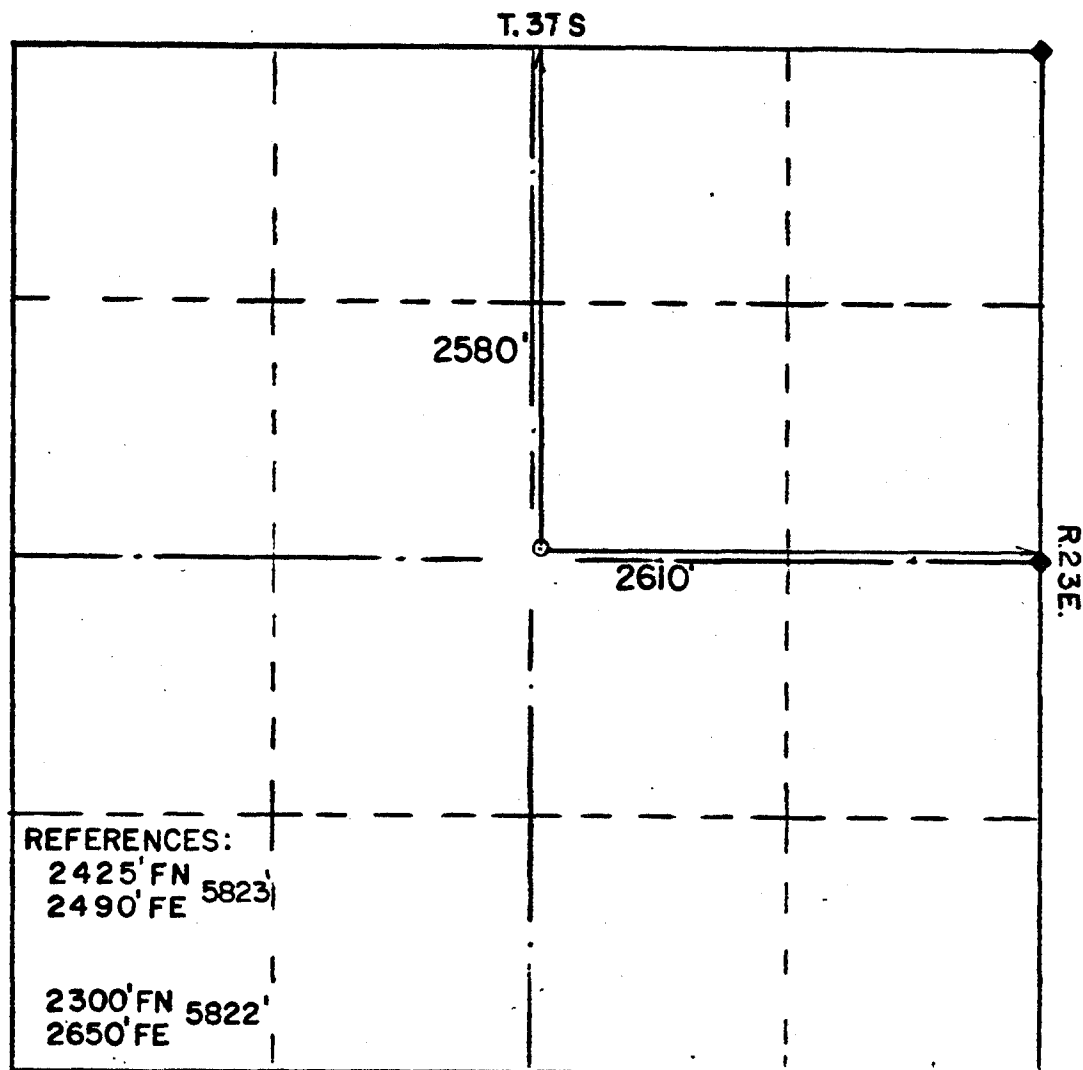
PERMIT NO. 43-037-31273

APPROVED BY _____
CONDITIONS OF APPROVAL, IF ANY:

APPROVED BY THE STATE
OF UTAH DIVISION OF
OIL, GAS, AND MINING

DATE: 8-14-86
BY: John R. Don
WELL SPACING: 302-1

WELL LOCATION AND ACREAGE DEDICATION PLAT



Operator R. T. DUNCAN		Well name GRYNBERG FEDERAL #1-13	
Section 13	Township 37 SOUTH	Range 23 EAST	Meridian SLM
Footages 2580' FN & 2610' FE		County/State SAN JUAN, UTAH	Elevation 5821
Formation	Dedicated Acreage	Requested by Permitco	
<p>The above plat is true and correct to the best of my knowledge and belief.</p> <div style="text-align: center;"> <p>REGISTERED LAND SURVEYOR No. 5705 Gerald M. HUDDLESTON, L.S. STATE OF UTAH</p> </div>			

ONSHORE OIL & GAS ORDER NO. 1

Approval of Operations on Onshore
Federal and Indian Oil and Gas Leases

RECEIVED
JUL 23 198-

DIVISION OF
OIL, GAS & MINING

GRYNBERG FEDERAL #1-13
2580' FNL and 2610' FEL
Sec. 13, T37S - R23E
San Juan County, Utah

Prepared For:

RAYMOND T. DUNCAN

By:

PERMITCO INC.
P.O. Box 44065
Denver, Colorado 80201-4065

Copies Sent To:

- 4 - BLM - Moab, Utah
- 1 - BLM - Monticello, Utah
- 1 - Div. of Oil, Gas & Mining - SLC, Utah
- 3 - Raymond T. Duncan - Denver, Colorado

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Permitco Incorporated
A Petroleum Permitting Company

ONSHORE ORDER NO. 1
Raymond T. Duncan
Grynberg Federal 1-13
2580' FNL and 2610' FEL
Sec. 13, T37S - R23E
San Juan County, Utah

CONFIDENTIAL - TIGHT HOLE

DRILLING PROGRAM

ONSHORE OIL & GAS ORDER NO. 1
Approval of Operations on Onshore
Federal and Indian Oil and Gas Leases

1. The surface formation and estimated formation tops to be encountered are as follows:

<u>Formation</u>	<u>Depth</u>	<u>Subsea</u>
Burro Canyon	Surface	
DeChelly	3200'	+2670'
Hermosa	4950'	+ 920'
Ismay	6000'	- 130'
Lower Ismay	6180'	- 310'
Gothic Shale	6235'	- 365'
Desert Creek	6260'	- 390'
Lower Desert Creek	6325'	- 455'
Chimney Rock Shale	6350'	- 480'
T.D.	6400'	- 530'

2. The estimated depths at which oil, gas, water or other mineral bearing zones are expected to be encountered are as follows:

<u>Substance</u>	<u>Formation</u>	<u>Anticipated Depth</u>
Gas & Oil	Ismay	6000'
Gas & Oil	Desert Creek	6260'

All fresh water and prospectively valuable minerals encountered during drilling, will be recorded by depth cased and cemented. All oil and gas shows will be tested to determine commercial potential.

3. Pressure control equipment will consist of a 10", 3000# BOP. (See BOP Diagram attached.)

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CONFIDENTIAL - TIGHT HOLE

DRILLING PROGRAM

Pressure tests will be conducted before drilling out from under all casing strings which are set and cemented in place. Blowout preventer controls will be installed prior to drilling the surface casing plug and will remain in use until the well is completed or abandoned. Preventers will be inspected and operated at least daily to ensure good mechanical working order, and this inspection recorded on the daily drilling report. Preventers will be pressure tested before drilling casing cement plugs.

4. a. Casing

The proposed casing program is as follows:

<u>Purpose</u>	<u>Depth</u>	<u>Hole Size</u>	<u>O.D.</u>	<u>Wt.</u>	<u>Grade</u>	<u>Type</u>	<u>New or Used</u>
Conductor	0-110'	17-1/2"	13-3/8"	48#	K-55	ST&C	New
Surface	0-2300'	12-1/4"	8-5/8"	24#	K-55	ST&C	New
Produc.	0-6400'	7-7/8"	5-1/2"	15.5#	K-55	ST&C	New

b. Cement

The cementing program will be as follows:

<u>Conductor</u>	<u>Type and Amount</u>
0-110'	Circulated to surface
<u>Surface</u>	<u>Type and Amount</u>
0-2300'	1100 sx Class B w/additives; or sufficient to circulate to surface.
<u>Production</u>	<u>Type and Amount</u>
	400 sx Class B with additives; or sufficient to cover zones of interest.

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DRILLING PROGRAM

c. Auxiliary Equipment will be as follows:

1. Kelly cock.
2. Float above the bit.
3. A sub with a full opening valve will be on the floor when the kelly is not in use.
4. Monitoring of the system will be done visually.

5. Drilling fluid will be as follows:

<u>Interval</u>	<u>Mud Type</u>	<u>Mud Wt.</u>	<u>Visc.</u>	<u>F/L</u>	<u>PH</u>
0-4800'	Natural	9.0-9.2	35	10-20	
4800-T.D.	Chem Gel	9.5-12.0	45	10 through pays	

6. Coring, logging and testing programs are as follows:

- a. No cores are anticipated.
- b. The logging program will consist of the following:

Dual Induction	2300'-T.D.
BHC Acoustic & BHC Density	4400'-T.D.
GR	Surface to T.D.
Dipmeter (If productive ro on edge of mound)	5950'-T.D.
- c. Drill Stem Tests will be run in the Ismay and Desert Creek formations.

Whether the well is completed as a dry hole or as a producer, "Well Completion or Recompletion Report and Log" (Form 3160-4) will be submitted not later than 15 days after completion of the well or after completion of operations being performed, in accordance with 43 CFR 3164. Two copies of all logs, core descriptions, core analysis, well-test data, geologic summaries, sample descriptions, and all other surveys or data obtained and compiled during the drilling, workover, and/or completion operations, will be filed with Form 3160-4. Samples (cuttings, fluids, and/or gases) will be submitted when requested by the District Manager.

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ONSHORE ORDER NO. 1
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San Juan County, Utah

CONFIDENTIAL - TIGHT HOLE

DRILLING PROGRAM

7. Abnormal conditions, bottom hole pressures and potential hazards.
- a. The maximum bottom hole pressure to be expected is 3700 psi.
 - b. Raymond T. Duncan plans to spud the Grynberg Federal #1-13 immediately upon approval of this application and intends to complete the well within approximately one month after the well has reached T.D.
 - c. The operator will contact the San Juan Resource Area at 801/587-2141, 48 hours prior to beginning any dirt work on this location.
 - d. No location will be constructed or moved, no well will be plugged, and no drilling or workover equipment will be removed from a well to be placed in a suspended status without prior approval of the District Manager. If operations are to be suspended, prior approval of the District Manager will be obtained and notification given before resumption of operations.
 - e. The spud date will be reported orally to the San Juan Area Manager, a minimum of 24 hours before spudding. A Sundry Notice (Form 3160-5) will be sent within 24 hours of spudding, reporting the spud date and time. The Sundry will be sent to the District Manager.
 - f. In accordance with Onshore Oil and Gas Order No. 1, this well will be reported on Form 9-329 "Monthly Report of Operations", starting with the month in which operations begin and continue each month until the well is physically plugged and abandoned. This report will be sent to the Moab BLM District Office, P. O. Box 970, Moab, Utah 84532.
 - g. If a replacement rig is contemplated for completion operations, a "Sundry Notice" (Form 3160-5) to that effect will be filed, for prior approval of the District Manager. All conditions of this approved plan are applicable during all operations conducted with the replacement rig.

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CONFIDENTIAL - TIGHT HOLE

DRILLING PROGRAM

- h. If the well is successfully completed for production, then the District Manager will be notified when the well is placed in a producing status. Such notification will be sent by telegram or other written communication, no later than the first business day following the date on which the well is placed on production.
- i. No well abandonment operations will begin without the prior approval of the District Manager. In the case of newly drilled dry holes or failures, and in emergency situations, oral approval will be obtained from the District Manager. A "Subsequent Report of Abandonment" (Form 3160-5), will be filed with the District Manager, within 30 days following completion of the well for abandonment. This report will indicate where plugs were placed and the current status of surface restoration.
- j. Final abandonment will not be approved until surface reclamation work required by the approved APD or approved abandonment notice has been completed to the satisfaction of the San Juan Area Manager or his representative, or the appropriate Surface Managing Agency.
- k. A first production conference will be scheduled within 15 days after receipt of the first production notice. The operator will schedule the conference with the San Juan Area Manager.

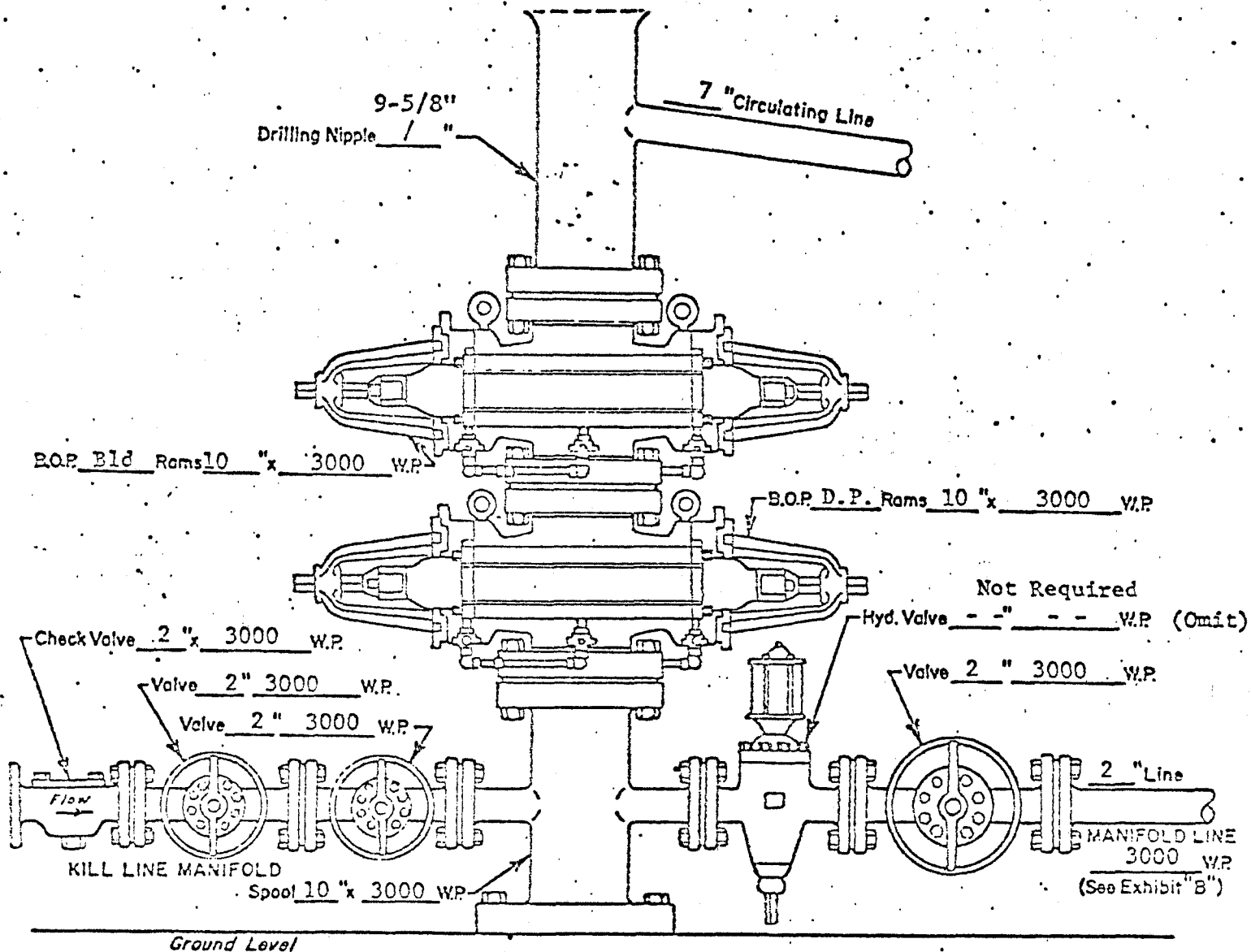
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COLEMAN DRILLING CO.

WELL NAME: _____

LOCATION : _____



WELL HEAD B.O.P.

3000 W.P.

☒ Hydraulic

ONSHORE ORDER NO. 1
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CONFIDENTIAL - TIGHT HOLE

SURFACE USE PLAN

ONSHORE OIL & GAS ORDER NO. 1

Thirteen Point Surface Use Plan

1. Existing Roads

- a. The proposed well site is located 18 miles northwest of Hatch Trading Post.
- b. Directions to the location from Hatch Trading Post are as follows:

Go north and west on the Montezuma Creek Road for 8.7 miles to the Perkins Ranch Road (#206). Turn west and proceed 4.3 miles to the Alkali Road and turn north and proceed 4.3 miles. Turn left (west) and follow new access (flagged) for approximately 1 mile to the location.

- c. For location of access roads within a 2-Mile radius, see Maps #1 and #2.
- d. Improvement to the existing access will not be necessary and will be limited to the total existing disturbed width.
- e. All existing roads will be maintained and kept in good repair during all drilling and completion operations associated with this well.
- f. An encroachment permit will be obtained from the San Juan County Road Department, 801/587-2231, ext. 43.

2. Planned Access Roads

- a. The maximum total disturbed width will be 30 feet. The road will be flatbladed with a running surface of approximately 20 feet wide.
- b. The maximum grade will be 7%.
- c. No turnouts are planned.

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CONFIDENTIAL - TIGHT HOLE

SURFACE USE PLAN

2. Planned Access Roads (cont.)

- d. The access road was centerline flagged at the time of staking.
- e. Drainage will be installed as deemed necessary by the dirt contractor.
- f. No gates, cattleguards or fence cuts will be necessary.
- g. Surface disturbance and vehicular travel will be limited to the approved location and approved access route. Any additional area needed will be approved in advance.
- h. The access road will be water barred or brought to Class III Road Standards within 60 days of dismantling of the drilling rig. If this time frame cannot be met, the San Juan Area Manager will be notified so that temporary drainage control can be installed along the access road.
- i. Four 18" culverts will be installed along the new access route. One of these culverts will be installed where the new access road and the wellpad intersect.
- j. Surfacing material may be required to prevent maintenance problems during wet weather conditions.
- k. A Right-of-Way grant is requested for approximately 1/2 mile of new access road as shown on Map #2. Enclosed is a check in the amount of \$50.00 in payment of the filing fee.

3. Location of Existing Wells Within a 1-Mile Radius of the Proposed Location. (See Map #3).

- a. Water Wells - none
- b. Injection or disposal wells - none
- c. Producing Wells - none
- d. Drilling Wells - none

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SURFACE USE PLAN

4. Location of Tank Batteries and Production Facilities.

- a. All permanent structures (onsite for six months or longer) constructed or installed (including oil well pump jacks) will be painted a flat, nonreflective, earthtone color to match the standard environmental colors, as determined by the Rocky Mountain Five-State Interagency Committee. All facilities will be painted within six months of installation. Facilities required to comply with the Occupational Safety and Health Act (OSHA) will be excluded. The color will be a neutral color that will blend in with the environment.
- b. If a tank battery is constructed on this lease, it will be surrounded by a dike of sufficient capacity to contain 1-1/2 times the storage capacity of the battery.
- c. Tank batteries will be placed as shown on Diagram #1.
- d. All loading lines will be placed inside the berm surrounding the tank battery.
- e. Any necessary pits will be properly fenced to prevent any wildlife entry. The production pit will be flagged overhead.
- f. All site security guidelines identified in 43 CFR 3162.7 regulations will be adhered to.
- g. All off-lease storage, off-lease measurement, or commingling on-lease or off-lease will have prior written approval from the District Manager.
- h. All product lines entering and leaving hydrocarbon storage tanks will be effectively sealed.
- i. Gas meter runs for each well will be located within 500 feet of the wellhead. The gas flowline will be buried from the wellhead to the meter and 500 feet downstream of the meter run or any production facilities. Meter runs will be housed and/or fenced.

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SURFACE USE PLAN

4. Production Facilities (cont.)

- j. The oil and gas measurement facilities will be installed on the well location. The oil and gas meters will be calibrated in place prior to any deliveries. Tests for meter accuracy will be conducted monthly for the first three months on new meter installations and at least quarterly thereafter. The San Juan Area Manager will be provided with a date and time for the initial meter calibration and all future meter proving schedules. A copy of the meter calibration reports will be submitted to the Moab District Office. All meter measurement facilities will conform with the API standards for liquid hydrocarbons and the AGA standard for natural gas measurement.

5. Location and Type of Water Supply

- a. All water needed for drilling purposes will be obtained from the Richard Gore Artesian Well which is located in the SE NE Sec. 12, T38S - R24E.
- b. Water will be trucked to location.
- c. No water well is to be drilled on this lease.
- d. Use of water for this operation will approved by obtaining a temporary use permit from the Utah State Engineer, 801/637-1303, and by receiving permission from the land owner of surface management agency to use the land containing the water source.

6. Source of Construction Material

- a. Road surfacing and pad construction material will be obtained from a commercial source.
- b. The use of materials under BLM jurisdiction will conform with 43 CFR 3610.2.3. Construction material will not be located on lease.

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SURFACE USE PLAN

7. Methods of Handling Waste Disposal

- a. The reserve pit will not be lined. At least half of the capacity will be in cut.
- b. Three sides of the reserve pit will be fenced with four strands of barbed wire before drilling starts. The fourth side will be fenced as soon as the drilling is completed. The fence will be kept in good repair while the pit is drying.
- c. A trash pit will be constructed near the mud tanks and dug at least six feet into solid, undisturbed material. It will be totally enclosed with a fine wire mesh before the rig moves in. The road and pad will be kept litter free.
- d. Produced waste water will be confined to a unlined pit for a period not to exceed 90 days after initial production. During the 90-day period, an application for approval of a permanent disposal method and location, along with the required water analysis, will be submitted for the District Manager's approval. Failure to file an application within the time allowed will be considered an incident of noncompliance, and will be grounds for issuing a shut-in order.

8. Ancillary Facilities

- a. There are no airstrips, camps, or other facilities planned during the drilling of the proposed well.

9. Well Site Layout

- a. See Diagram #2 for rig layout. See Diagram #3 for cross section of drill pad. See Diagram #4 for cuts and fills.
- b. The location of mud tanks; reserve, burn and trash pits; pipe racks; living facilities and soil stockpiles will be shown on Diagram #2 and #4. The location will be laid out and constructed as discussed during the predrill conference.

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SURFACE USE PLAN

9. Wellsite Layout (cont.)

- c. The top 12 inches of soil material will be removed from the location and stockpiled separate from the trees on the south side. Topsoil along the access will be reserved in place.
- d. Access to the well pad will be from the northeast.
- e. The two drainages running through the pad will be diverted around the north and south edges of the wellpad. A berm or ditch will be constructed above the pit on the uphillside to prevent any runoff from flowing into the pit.

10. Reclamation

- a. Immediately upon completion of drilling, all trash and debris will be collected from the location and surrounding area. All trash and debris will be disposed of in the trash pit and will then be compacted and buried under a minimum of two feet of compacted soil.
- b. The operator or his contractor will contact the San Juan Resource Area office in Monticello, Utah (801/587-2141) 48 hours before starting reclamation work that involves earthmoving equipment and upon completion of restoration measures.
- c. Before any dirt work to restore the location takes place, the reserve pit must be completely dry.
- d. All disturbed areas will be recontoured to blend as nearly as possible with the natural topography. This includes removing all berms and refilling all cuts.
- e. The stockpiled topsoil will be spread evenly over the disturbed area. All disturbed areas will be ripped 12 inches deep with the contour.

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SURFACE USE PLAN

10. Reclamation of Surface (cont.)

- f. Water bars will be built as follows to control erosion.

<u>Grade</u>	<u>Spacing</u>
2%	Every 200 Feet
2-4%	Every 100 Feet
4-5%	Every 75 Feet
5+%	Every 50 Feet

- g. Seed will be broadcast between October 1 and February 28 with the following prescription. A harrow or similar implement will be dragged over the area to assure seed cover.

6 lbs/acre Crested Wheatgrass (*Agropyron desertorum*)
2 lbs/acre Fourwing Saltbush (*Atriplex Canenscens*)
1 lbs/acre Dryland Alfalfa

- h. After seeding is complete, the stockpiled trees will be scattered evenly over the disturbed areas. The access will be blocked to prevent vehicular access.
- i. The reserve pit and that portion of the location and access road not needed for production and production facilities will be reclaimed as described in the reclamation section. Enough topsoil will be kept to reclaim the remainder of the location at a future date. This remaining stockpile of topsoil will be seeded in place using the prescribed seed mixture.

11. a. Surface Ownership

Federal

b. Mineral Ownership

Federal

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SURFACE USE PLAN

12. Other Information

- a. There will be no change from the proposed drilling and/or workover program without prior approval from the District Manager. Safe drilling and operating practices must be used. All wells, whether drilling, producing, suspended, or abandoned will be identified in accordance with 43 CFR 3162.2.
- b. "Sundry Notice and Report on Wells" (Form 3160-5) will be filed for approval for all changes of plans and other operations in accordance with 43 CFR 3164.
- c. The dirt contractor will be provided with an approved copy of the surface use plan.
- d. If subsurface cultural materials are exposed during construction, work in that spot will stop immediately and the San Juan Resource Area Office will be contacted. All people who are in the area will be informed by the operator that they are subject to prosecution for disturbing archeological sites or picking up artifacts. Salvage or excavation of identified archeological sites will be done by a BLM approved archeologist only if damage occurs.
- e. This permit will be valid for a period of one year from the date of approval. After permit termination, a new application will be filed for approval for any future operations.
- f. An archeological study will be done by LaPlata Archaeological Consultants. No significant cultural resources were found and clearance is recommended. This report will be submitted directly to the appropriate agencies by LaPlata Archaeological Consultants.

Permitco

Permitco Incorporated
A Petroleum Permitting Company

ONSHORE ORDER NO.
Raymond T. Duncan
Grynberg Federal 1-13
2580' FNL and 2610' FEL
Sec. 13, T37S - R23E
San Juan County, Utah

CONFIDENTIAL - TIGHT HOLE

SURFACE USE PLAN

13. Lessee's or Operator's Representative and Certification

Permit Matters

PERMITCO INC.
Lisa L. Green
P.O. Box 44065
Denver, CO 80201-4065
303/322-7878

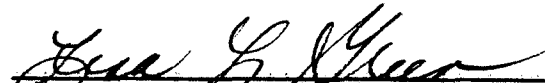
Drilling & Completion Matters

RAYMOND T. DUNCAN
1777 S. Harrison
Penthouse 1
Denver, CO 80210
Steve Fallin
303/759-3303 (W)
303/770-0705 (H)

Certification

I hereby certify that I, or persons under my direct supervision, have inspected the proposed drillsite and access route; that I am familiar with the conditions which presently exist; that the statements made in this plan are, to the best of my knowledge, true and correct; and, that the work associated with the operations proposed herein will be performed by Raymond T. Duncan and its contractors and subcontractors in conformity with the plan and the terms and conditions under which it is approved.

July 21, 1986
Date:


Lisa L. Green - PERMITCO INC.
Authorized Agent for:
RAYMOND T. DUNCAN

Permitco

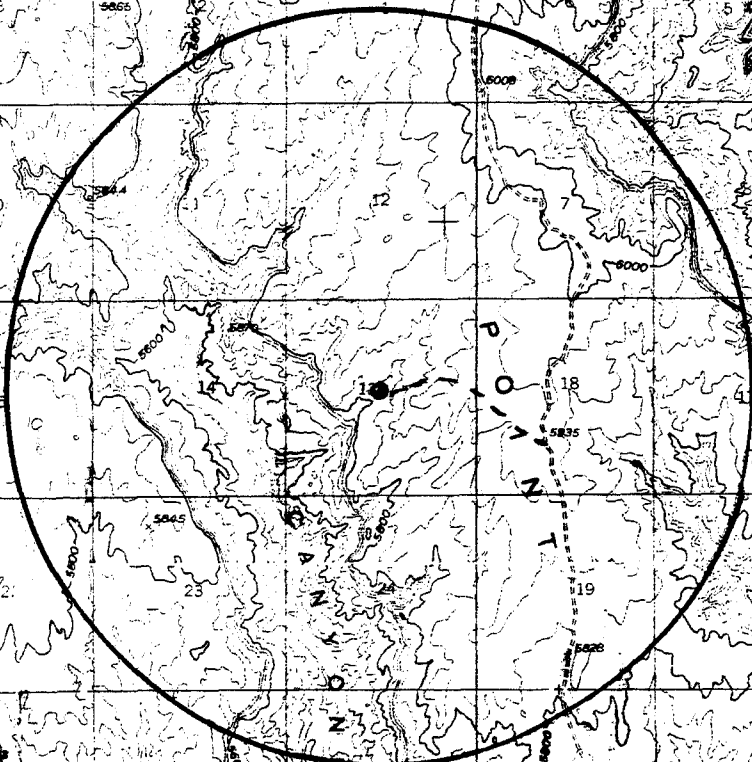
Permitco Incorporated
A Petroleum Permitting Company

R23E

MAP #1
Raymond T. Duncan
Grynberg Federal #1-13
2580' FNL and 2610' FEL
Sec. 13, T37S - R23E
San Juan County, Utah

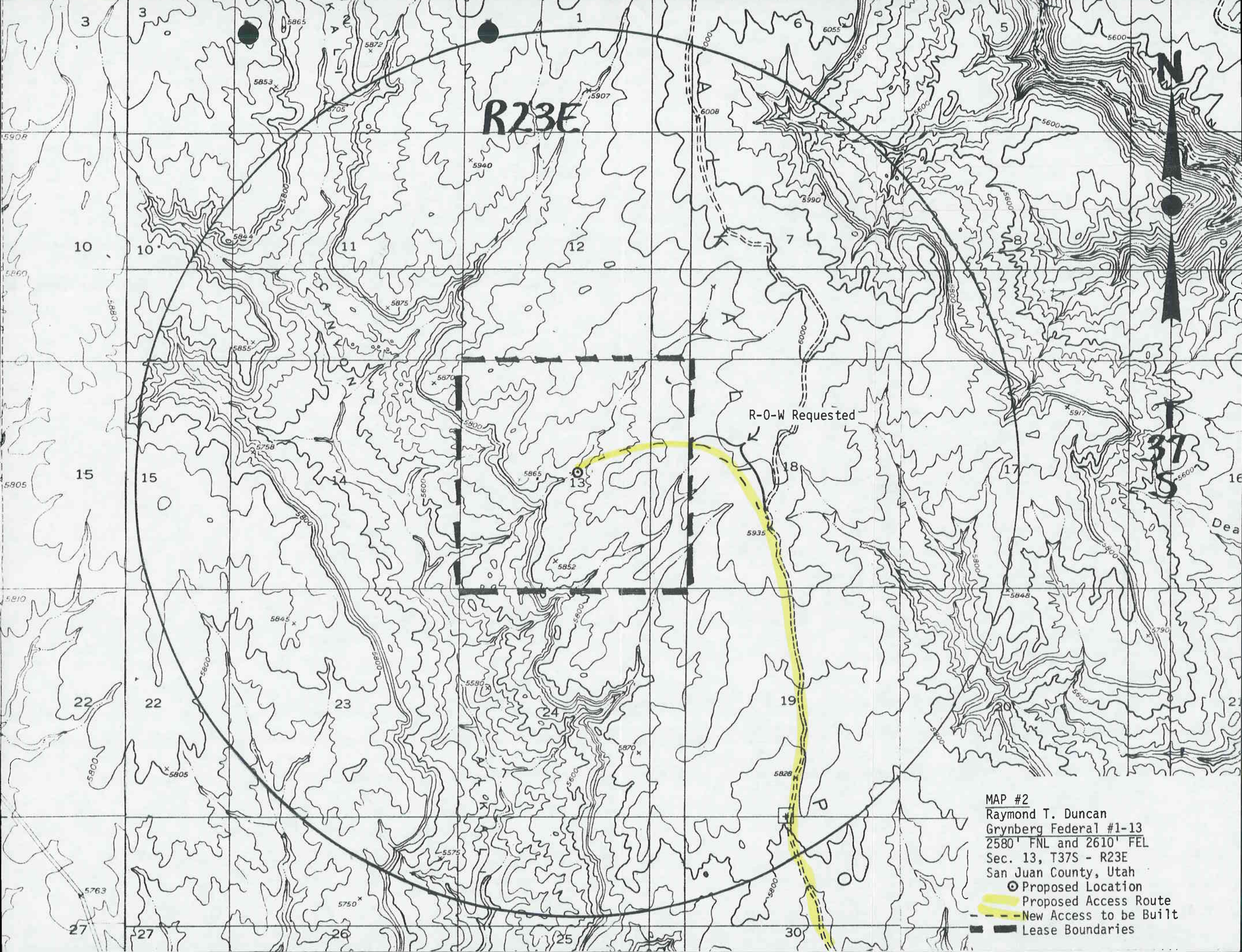
● Proposed Location
— Proposed Access Route

--- New Access to be Built



To Blanding, Utah

To Perkins Ranch/
Hatch Trading Post

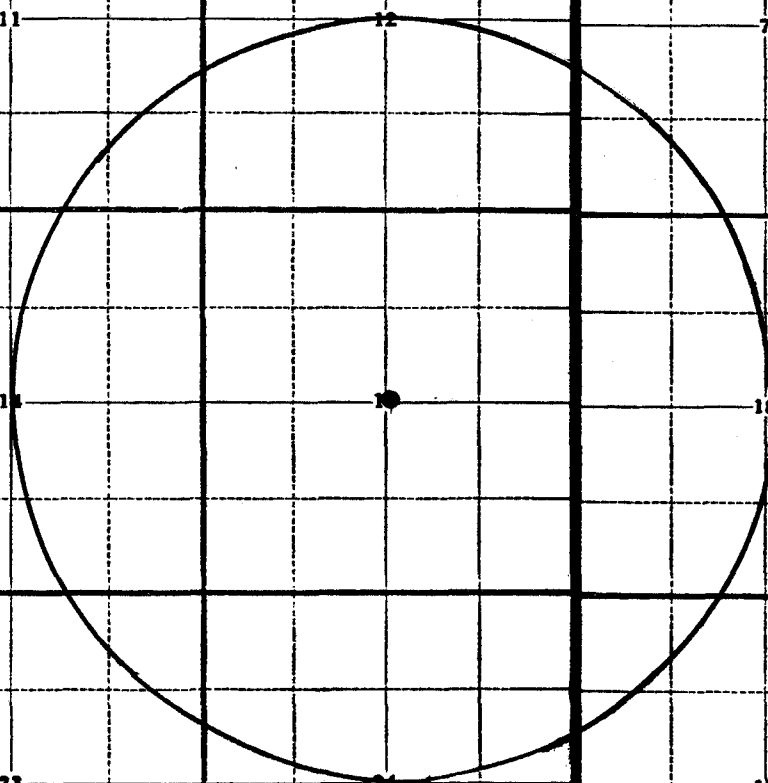


MAP #2
Raymond T. Duncan
Grynberg Federal #1-13
2580' FNL and 2610' FEL
Sec. 13, T37S - R23E
San Juan County, Utah
● Proposed Location
Yellow line Proposed Access Route
--- New Access to be Built
--- Lease Boundaries

R23E

N

T
37
S



MAP #3
Raymond T. Duncan
Grynberg Federal #1-13
2580' FNL and 2610' FEL
Sec. 13, T37S - R23E
San Juan County, Utah

● Proposed Location

Scale: 1" = 60'

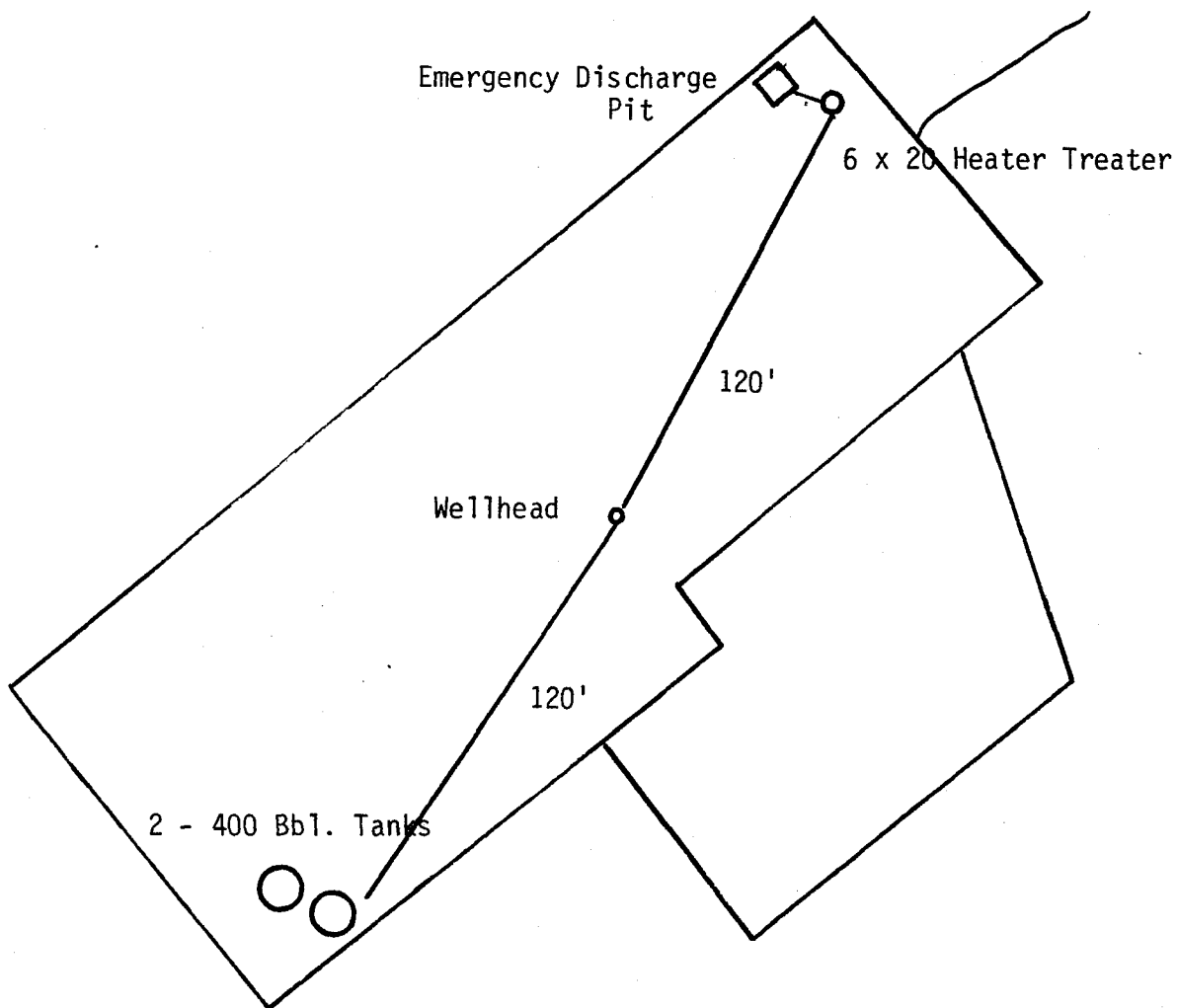


DIAGRAM #1
Raymond T. Duncan
Grynberg Federal #1-13
2580' FNL and 2610' FEL
Sec. 13, T37S - R23E
San Juan County, Utah

Scale: 1" = 60'

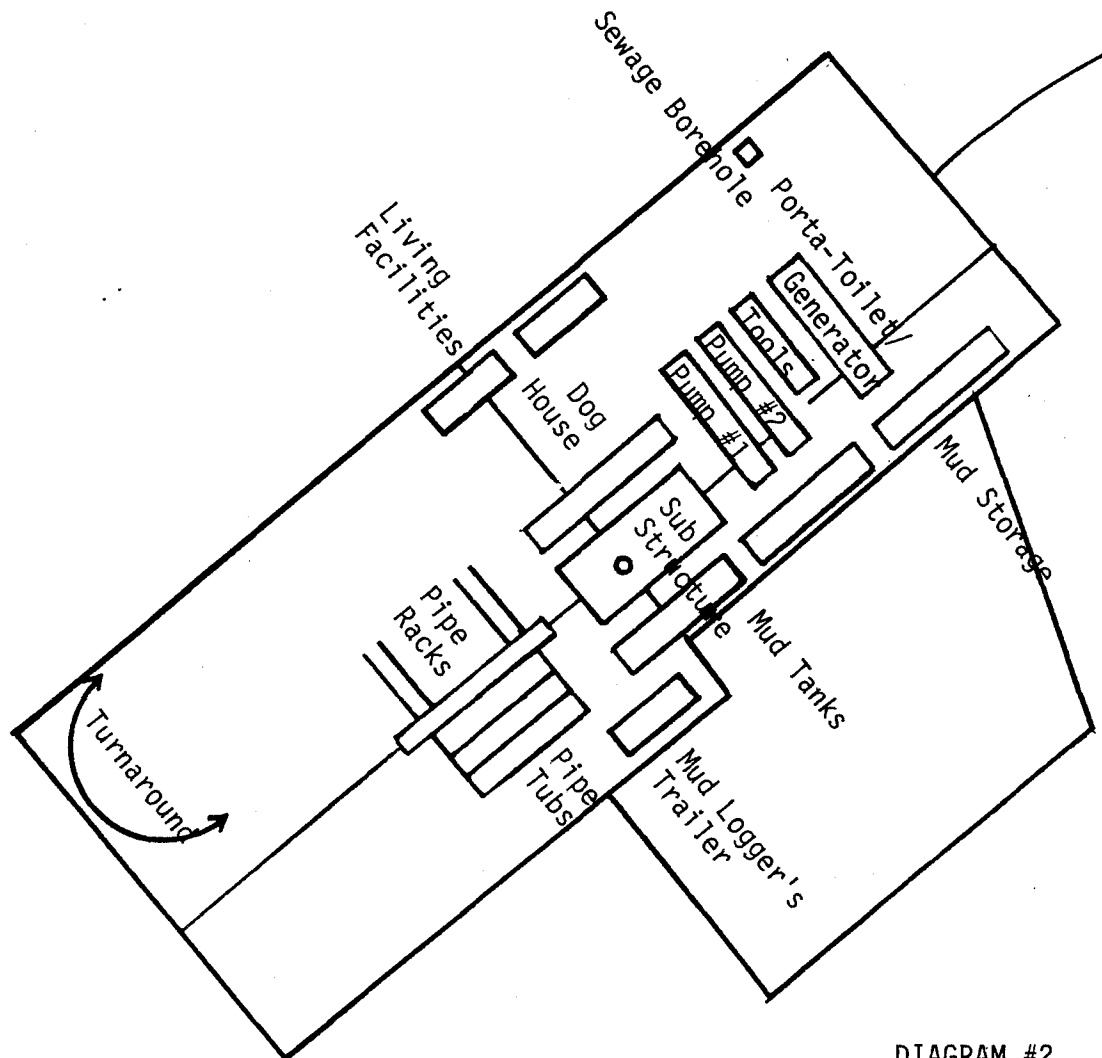




DIAGRAM #2
Raymond T. Duncan
Grynberg Federal #1-13
2580' FNL and 2610' FEL
Sec. 13, T37S - R23E
San Juan County, Utah

WELL PAD CROSS-SECTION

Grynberg Federal 1-13

Cut 
Fill 

Scales: 1" = 60' H.
1" = 30' V.

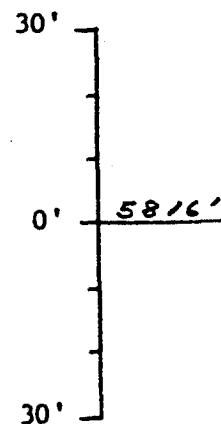
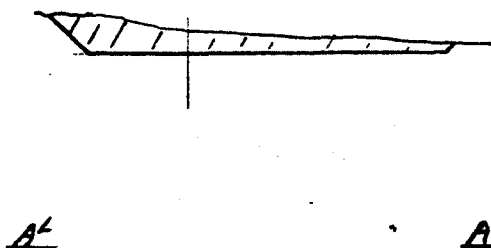
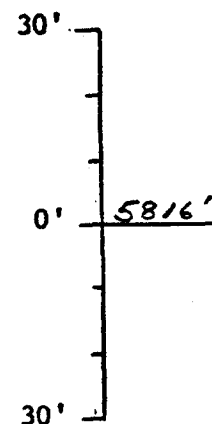
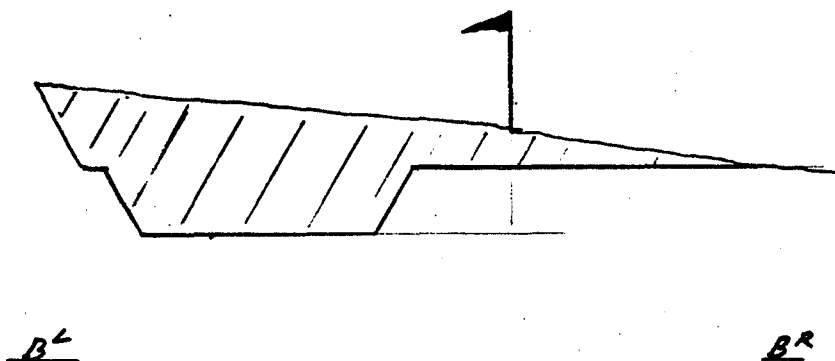
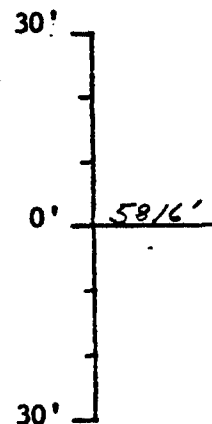
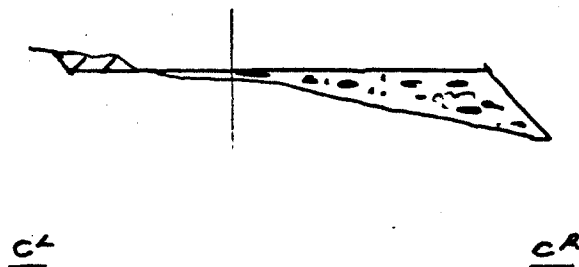
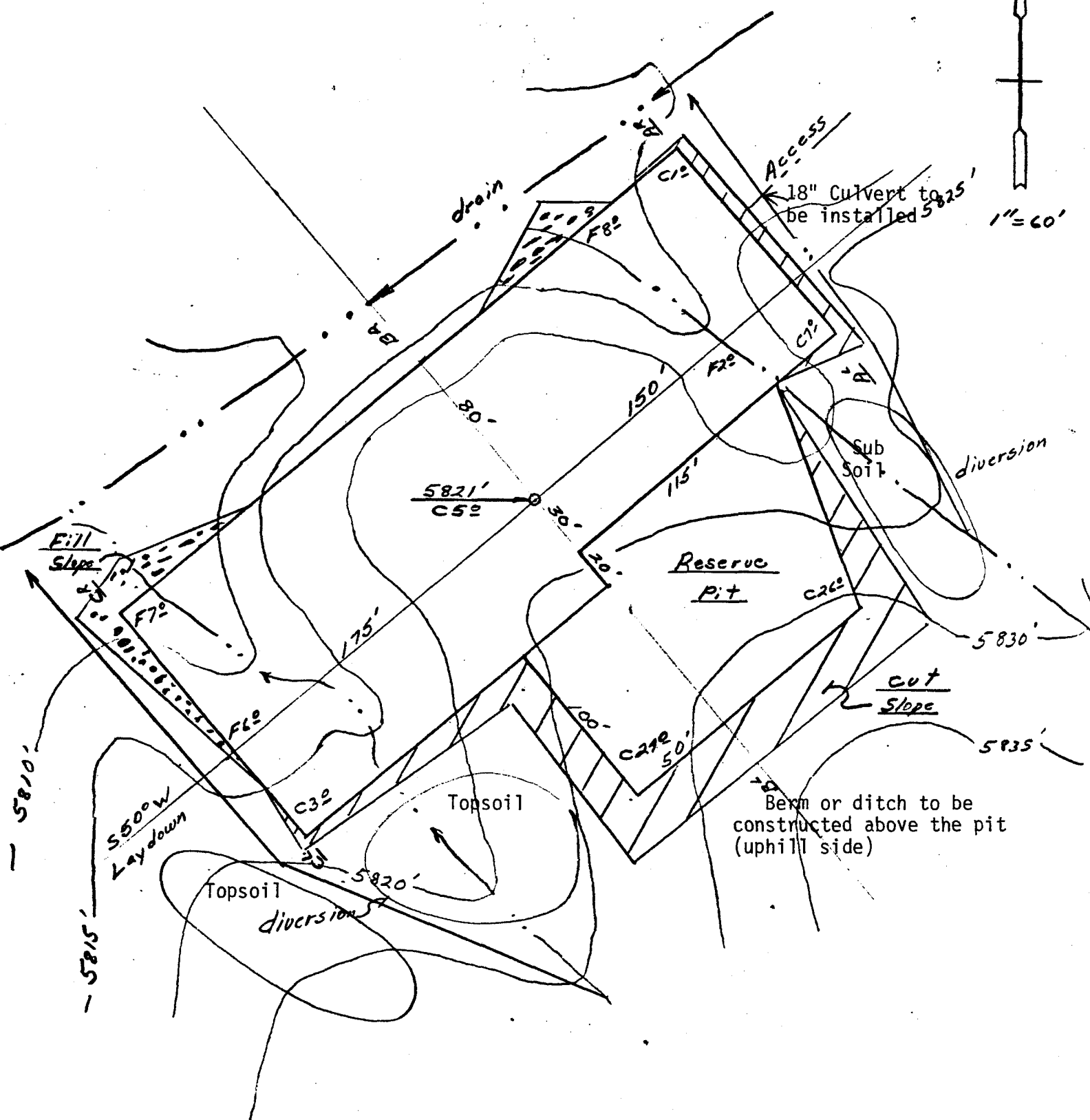
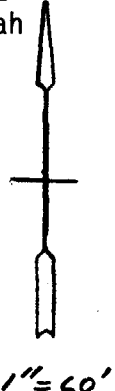


Diagram #3
Raymond T. Duncan
Grynberg Federal #1-13
2580' FNL and 2610' FEL
Sec. 13, T37S - R23E
San Juan County, Utah

PLAN VIEW

DIAGRAM #4
Cut & Fill Diagram
Raymond T. Duncan
Grynberg Federal 1-13
2580' FNL and 2610' FEL
Sec. 13, T37S - R23E
San Juan County, Utah



081901

061

OPERATOR Raymond T. Duncan DATE 8-13-86WELL NAME Lynberg Fed. 1-13SEC SWNE 13 T 37S R 23E COUNTY San Juan

43-037-31273

API NUMBER

Fed!

TYPE OF LEASE

CHECK OFF:

☒

PLAT

☒

BOND

☐NEAREST
WELL☒

LEASE

☒

FIELD

☒POTASH OR
OIL SHALE

PROCESSING COMMENTS:

No other well in Sec. 13.Need water permitException location requestedAPPROVAL LETTER: SPACING: ☐ 203 UNIT☐ 302☐

CAUSE NO. & DATE

☒

302.1

STIPULATIONS:

1- Water



STATE OF UTAH
NATURAL RESOURCES
Oil, Gas & Mining

Norman H. Bangerter, Governor
Dee C. Hansen, Executive Director
Dianne R. Nielson, Ph.D., Division Director

355 W. North Temple • 3 Triad Center • Suite 350 • Salt Lake City, UT 84180-1203 • 801-538-5340

August 14, 1986

Raymond T. Duncan
1777 S. Harrison Street
Penthouse 1
Denver, Colorado 80210

Gentlemen:

Re: Well Name: Grynberg Federal 1-13 - SW NE Sec. 13, T . 37S, R. 23E
2580' FNL, 2610' FEL - San Juan County, Utah

Approval to drill the referenced well is hereby granted in accordance with Rule 302.1, Oil and Gas Conservation General Rules, subject to the following stipulations:

1. Prior to commencement of drilling, receipt by the Division of evidence providing assurance of an adequate and approved supply of water as required by Chapter 3, Title 73, Utah Code Annotated.

In addition, the following actions are necessary to fully comply with this approval:

1. Spudding notification to the Division within 24 hours after drilling operations commence.
2. Submittal to the Division of completed Form OGC-8-X, Report of Water Encountered During Drilling.
3. Prompt notification to the Division should you determine that it is necessary to plug and abandon this well. Notify John R. Baza, Petroleum Engineer, (Office) (801) 538-5340, (Home) 298-7695, or R. J. Firth, Associate Director, (Home) 571-6068.
4. Compliance with the requirements and regulations of Rule 311.3, Associated Gas Flaring, Oil and Gas Conservation General Rules.

Page 2

Raymond T. Duncan

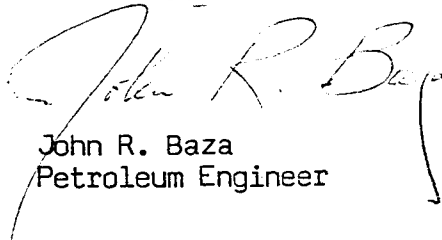
Well Name: Grynberg Federal 1-13

August 14, 1986

5. Prior to commencement of the proposed drilling operations, plans for toilet facilities and the disposal of sanitary waste at the drill site shall be submitted to the local health department having jurisdiction. Any such drilling operations and any subsequent well operations must be conducted in accordance with applicable State and local health department regulations. A list of all local health departments and copies of applicable regulations are available from the Division of Environmental Health, Bureau of General Sanitation, telephone (801) 533-6163.
6. This approval shall expire one (1) year after date of issuance unless substantial and continuous operation is underway or an application for an extension is made prior to the approval expiration date.

The API number assigned to this well is 43-037-31273.

Sincerely,

A handwritten signature in cursive script, appearing to read "John R. Baza".

John R. Baza
Petroleum Engineer

as

Enclosures

cc: Branch of Fluid Minerals

D. R. Nielson

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

APPLICATION FOR PERMIT TO DRILL, DEEPEN, OR PLUG BACK

1a. TYPE OF WORK

DRILL ☒

DEEPEN ☐

PLUG BACK ☐

b. TYPE OF WELL

OIL WELL ☐

GAS WELL ☒

OTHER

SINGLE ZONE ☒

MULTIPLE ZONE ☐

2. NAME OF OPERATOR

Raymond T. Duncan

303/759-3303

3. ADDRESS OF OPERATOR

1777 S. Harrison St., Penthouse 1 Denver, CO 80210

4. LOCATION OF WELL (Report location clearly and in accordance with any State requirements.)

At surface

2580' FNL and 2610' FEL

At proposed prod. zone SW NE

14. DISTANCE IN MILES AND DIRECTION FROM NEAREST TOWN OR POST OFFICE*

18 miles NW of Hatch Trading Post, Utah

15. DISTANCE FROM PROPOSED*

LOCATION TO NEAREST

PROPERTY OR LEASE LINE, FT.

(Also to nearest drlg. unit line, if any)

30

16. NO. OF ACRES IN LEASE

1600

17. NO. OF ACRES ASSIGNED TO THIS WELL

40

18. DISTANCE FROM PROPOSED LOCATION*

TO NEAREST WELL, DRILLING, COMPLETED, OR APPLIED FOR, ON THIS LEASE, FT.

none

19. PROPOSED DEPTH

6400'

20. ROTARY OR CABLE TOOLS

Rotary

21. ELEVATIONS (Show whether DF, RT, GR, etc.)

5821' GR

22. APPROX. DATE WORK WILL START*

August 15, 1986

23.

PROPOSED CASING AND CEMENTING PROGRAM

SIZE OF HOLE	SIZE OF CASING	WEIGHT PER FOOT	SETTING DEPTH	QUANTITY OF CEMENT
17-1/2"	13-3/8"	48#	110'	Cement to Surface
12-1/4"	8-5/8"	24#	2300'	1100 sx or suffic. to circ. to sur
7-7/8"	5-1/2"	15.5#	6400'	400 sx or suffic. to cover zones of interest.

RECEIVED
AUG 15 1986

DIVISION OF
OIL, GAS & MINING

IN ABOVE SPACE DESCRIBE PROPOSED PROGRAM: If proposal is to deepen or plug back, give data on present productive zone and proposed new productive zone. If proposal is to drill or deepen directionally, give pertinent data on subsurface locations and measured and true vertical depths. Give blowout preventer program, if any.

24.

SIGNED

Raymond T. Duncan

TITLE

Consultant for
Raymond T. Duncan

DATE

7/21/86

(This space for Federal or State office use)

PERMIT NO.

APPROVAL DATE

APPROVED BY

/s/ GENE NOUDINE

TITLE

DISTRICT MANAGER

DATE

AUG 12 1986

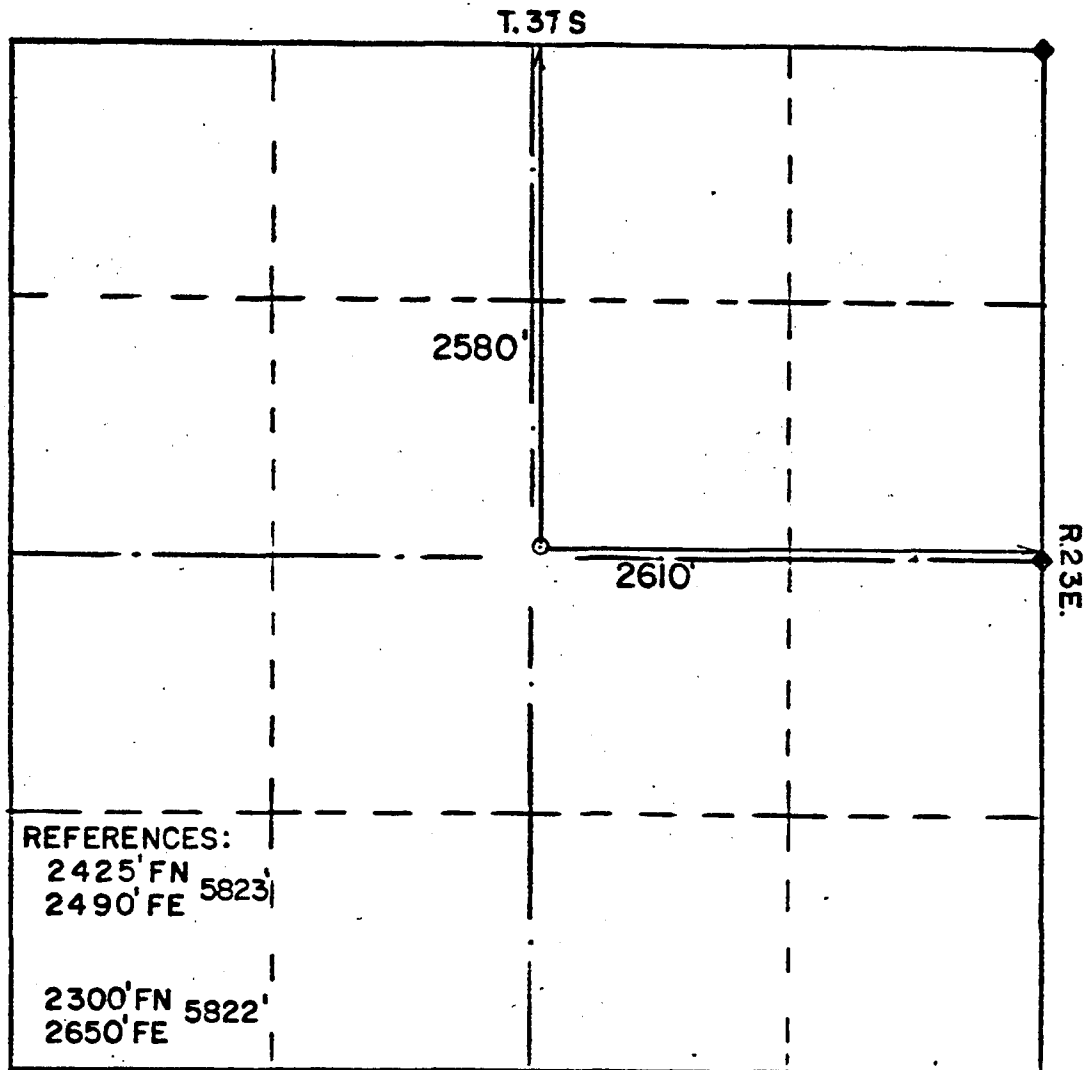
CONDITIONS OF APPROVAL, IF ANY:

FLARING OR VENTING OF
GAS IS SUBJECT OF NTL 4-A
DATED 1/1/80

NOTICE OF APPROVAL

SUBJECT TO RIGHT OF WAY
APPROVAL

WELL LOCATION AND ACREAGE DEDICATION PLAT



Operator R.T. DUNCAN		Well name GRYNBERG FEDERAL #1-13	
Section 13	Township 37 SOUTH	Range 23 EAST	Meridian SLM
Footages 2580' FN & 2610' FE		County/State SAN JUAN, UTAH	Elevation 5821
Formation	Dedicated Acreage	Requested by Permitco	
<p>The above plat is true and correct to the best of my knowledge and belief.</p> <div style="text-align: center;"> <p>REGISTERED LAND SURVEYOR No. 5705 Gerald C. HUBBARD, U.S. STATE OF UTAH</p> </div>			

Your contact with the District Office is:

Greg Noble, Petroleum Engineer

Office Phone: (801) 259-6111

Home Phone: (801) 259-8811

 , Petroleum Engineer

Office Phone:

Home Phone:

Address:

82 East Dogwood, P. O. Box 970
Moab, Utah 84532

Your contact with the San Juan Resource Area Office is:

Richard McClure, Natural Resource Specialist

Office Phone: (801) 587-2141

Home Phone: (801) 587-2874

Address:

480 South First West, P. O. Box 7
Monticello, Utah 84535

RECEIVED SEP 29 1956

~~103100~~
103101

RAYMOND T. DUNCAN
NO. 1-13 GRYNBERG FEDERAL
SW NE SECTION 13, T37S-R23E
SAN JUAN COUNTY, UTAH

WELLSITE GEOLOGY: Jim Holst
Intermountain Wellsite Geologists
P. O. Box 4007
Casper, Wyoming 82604
(307) 266-2009

TABLE OF CONTENTS

GENERAL INFORMATION

Well Data.	1
Well Location in the Prospect Area	3
Base Map of the Prospect Area.	4
Well Drilling Chronology	5
Breakdown of Rig Time.	7
Summary Drilling Data.	8
Bit Record	9
Survey Data.	10
Depth Corrections.	11
Mud Data	12

FORMATION TOPS AND E-LOG DATA

Formation Tops	13
Structural/Stratigraphic Comparison w/Offsets.	14
Log Suite.	15
Evaluation of Log Quality.	15
Log Calculations	16
Formulas and Assumptions Used in Calculations.	17

SAMPLE DESCRIPTIONS

Forward to Sample Descriptions	18
Sample Descriptions.	18

SUMMARY

Prospect Overview.	27
Formation Summary.	27
Post Drilling Comments	28

WELL DATA

OPERATOR: Raymond T. Duncan
1777 South Harrison Street
Penthouse One
Denver, Colorado 80210
(303) 759-3303
Geologist: Bob Lentz

WELL NAME: No. 1-13 Grynberg Federal

WELL LOCATION: 2580' FNL & 2610' FEL
Section 13 (SW NE)
Township 37 South, Range 23 East
San Juan County, Utah

SPUD DATE: August 27, 1986 2:00 P.M.

DATE DRILLING COMPLETED September 10, 1986 9:00 A.M.

ELEVATIONS: Ground Level: 5816'
Kelly Bushing: 5826'

SURFACE CASING: 13 3/8" set at 52' KB
8 5/8" set at 2305' KB

OPEN HOLE SIZE: 7 7/8"

TOTAL DEPTH: Driller: Pipe Tally 6380'; SLM 6383'
Logger: 6379'

DRILLING CONTRACTOR: Exeter Drilling Rig No. 68
1670 Broadway, Suite 3400
Denver, Colorado 80217
(303) 861-0181
Toolpusher: H.E. Teter
Chris Nelson

DRILLING SUPERVISION: J.A. (Arkie) Browning
P. O. Box 1058
Cortez, Colorado 81321
(303) 565-8806
Mobile: (303) 565-5000

DRILLING MUD: Summit Drilling Fluids
518 17th Street, Suite 750
Denver, Colorado 80202
(303) 572-3011
Engineer: Jimmy Dobbins

WIRELINE LOGS:

Schlumberger Well Services
200 San Juan Blvd.
P. O. Box 250
Farmington, New Mexico 87499
(505) 325-5006
Engineer: Roger Sitton

WELLSITE GEOLOGY:

Intermountain Wellsite Geologists
P. O. Box 4007
Casper, Wyoming 82604
(307) 266-2009
Geologist: Jim Holst

SAMPLES:

30' Samples Surface to 4000'
10' Samples 4000' to T.D.
1 set dry cut to Amstrat in Denver
Show samples to Duncan in Denver

PRESENT WELL STATUS:

Plug and Abandon Location

WELL LOCATIONS IN PROSPECT AREA

Township 37 South, Range 23 East, San Juan County, Utah

Section 2

* -b- Skyline South Mustang #2-34 510' FSL & 1970' FEL (SW NE)

Section 12

-o- ADA (NE SE)

Section 13

-o- Duncan No. 1-13 Grynberg 2580' FNL & 2610' FEL (SW NE)

Section 14

-o- · Occidental (NW SW)

Section 23

 Woods (NW SE)


Section 24

-0- Pan Am (NW SW)

-O- Cox (SW SE)

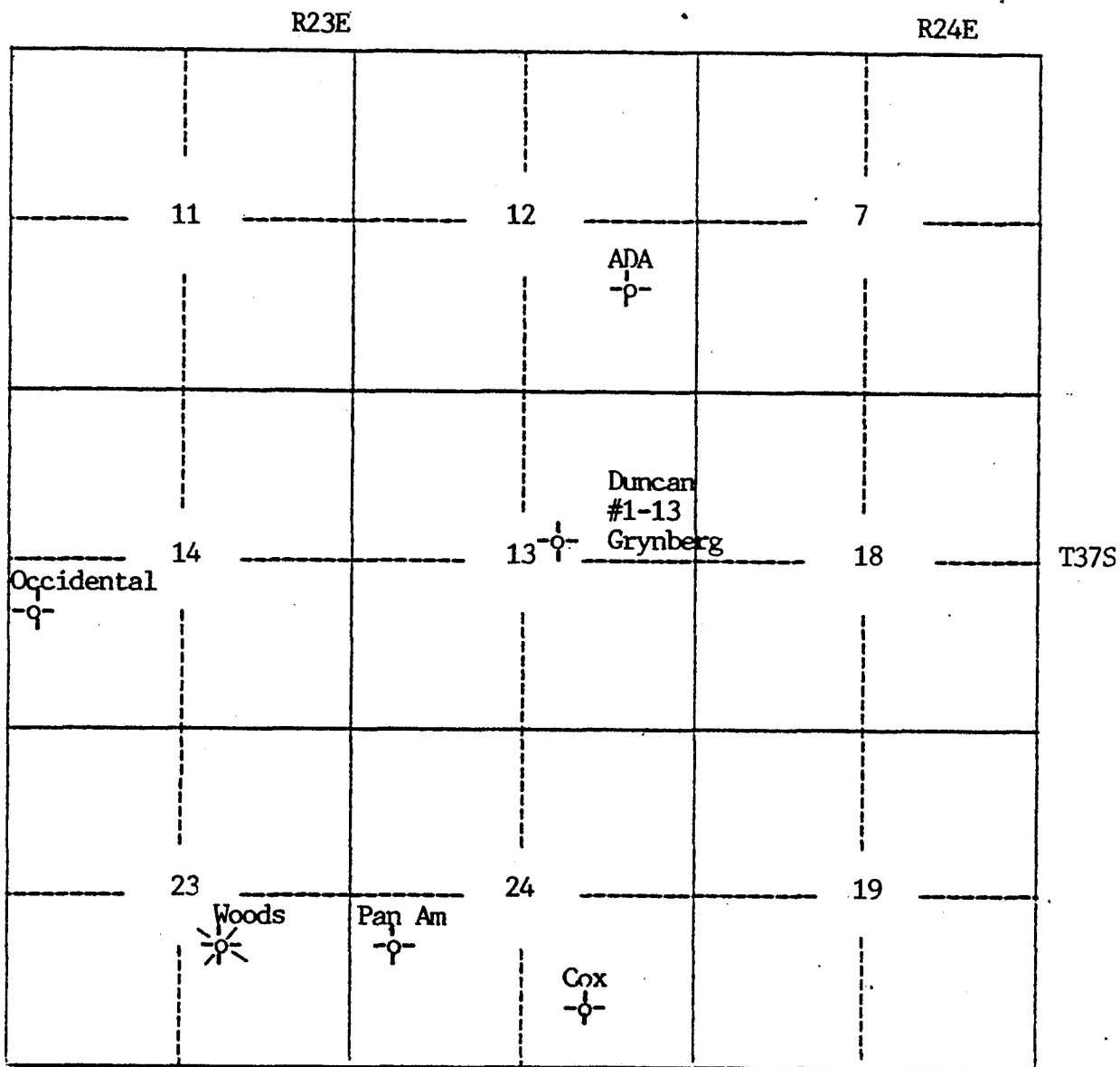
Township 37 South, Range 24 East, San Juan County, Utah

Section 20

*  MOOR No. 1-20 Federal 2050' FNL & 2100' FEL (SW NE)

* Offset wells used for correlation

BASE MAP OF PROSPECT AREA



San Juan County, Utah

WELL DRILLING CHRONOLOGY

NOTE: Days are described here and on the following charts based on the I.A.D.C. Daily Drilling Report from 12:00 A.M. to 12:00 A.M. M.D.T. Footage drilled and cumulative footage per day is listed in parenthesis below the date.

August 27, 1986 (0' - 92'/92')	Finish rigging up, drill rat and mouse hole. Spud well at 2:00 P.M. Drilling 17 1/4" hole with surface bit no. 1A. Drilled from grass roots to 92 feet. Circulate, drop survey and trip out of hole. Run 63.5 feet 13 3/8" 48 lbs. casing set at 52.00 feet K.B. Work casing down.
August 28, 1986 (52' - 326'/274')	Cement 13 3/8" casing with 85 sacks with 2% calcium chloride. Wait on cement, trip into hole with surface bit 2A. Drilling cement with 11" hole (49' to 82') open hole to 92'. Drilling new hole, drilled from 92' to 326'.
August 29, 1986 (326' - 1887'/1561')	Drilled from 326' to 1887'.
August 30, 1986 (1887' - 2305'/418')	Drilled from 1887' to 2305'. Circulate, drop survey and trip out of hole. Run 58 joints 24 lb. 2302.35', 8 5/8" casing set at 2304.85' K.B., cement casing with 450 sacks Class B with 6% Gel Yy LB. F/S and 155 sacks Class B with Yy LB. F/S.
August 31, 1986 (2305' - 2620'/315')	Wait on cement, nipple up, test blind rams with 1500 lbs., test pipe rams to 1000 lbs., trip into hole. Drill cement (220') with bit no. 3, drilling 7 7/8" hole. Drilled from 2305' to 2620'.
September 1, 1986 (2620' - 3594'/974')	Drilled from 2620' to 3594'.
September 2, 1986 (3594' - 4349'/755')	Drilled from 3594' to 4349'. Geologist and mudlogger on location.
September 3, 1986 (4349' - 4925'/576')	Drilled from 4349' to 4925'.
September 4, 1986 (4925' - 5260'/335')	Drilled from 4925' to 5199'. Drop survey, trip out of hole, strap out of hole, change out flow nipple, trip into hole with bit no. 4 (J22C). Drilled from 5199' to 5260'.
September 5, 1986 (5260' - 5639'/379')	Drilled from 5260' to 5639'. Drop survey, trip for bit, left cone in hole. Trip in hole with magnet and fish for lost cone.

BIT RECORD

<u>BIT NO.</u>	<u>SIZE</u>	<u>MANUF.</u>	<u>TYPE</u>	<u>FOOTAGE RUN</u>	<u>TOTAL FTG.</u>	<u>HOURS RUN</u>	<u>FT/HR</u>	<u>DULL CODE</u>
1A	17 1/2"	STC	SDS	0' - 92'	92'	7.75	11.9'	
2A	11"	HTC	J22	92' - 2305'	2213'	41.75'	53'	4-2-I
3	7 7/8"	HTC	J22	2305' - 5199'	2894'	86.0	33.7'	4-4-I
4	7 7/8"	HTC	J22C	5199' - 5639'	440'	23	19.1'	4-8-0
5	7 7/8"	HTC	J33	5639' - 6093'	454'	37.5	12.1'	8-4-I
6	7 7/8"	HTC	J22	6093' - 6380'	<u>287'</u>	<u>24.25</u>	<u>11.8'</u>	4-4-I
					<u>6380'</u>	<u>220.25</u>	<u>29</u>	

SURVEY DATA

<u>DATE</u> <u>1986</u>	<u>SURVEY</u> <u>DEPTH</u>	<u>SURVEY</u> <u>TYPE</u>	<u>DEGREES</u> <u>DEVIATION</u>
8/27	90'	Dropped	3/4°
8/29	495'	Wireline	3/4°
8/29	961'	Wireline	3/4°
8/29	1471'	Wireline	3/4°
8/30	1960'	Wireline	1°
8/30	2271'	Dropped	2 1/2°
8/31	2558'	Wireline	1 3/4°
9/1	3124'	Wireline	1 1/4°
9/2	3878'	Wireline	1/2°
9/3	4444'	Wireline	1/2°
9/4	4935'	Wireline	3/4°
9/4	5169'	Dropped	1°
9/5	5627'	Dropped	3/4°
9/9	6093'	Dropped	1°

DEPTH CORRECTIONS

<u>DATE</u> <u>1986</u>	<u>BOARD</u> <u>DEPTH</u>	<u>S.L.M.</u> <u>DEPTH</u>	<u>CORRECTION AND COMMENTS</u>
8/30	2305'	2310'	No correction made (+5)
9/4	5199'	5200'	No correction made (+1)
9/10	6380'	6383'	No correction made (+3)

MUD DATA

<u>DATE</u> <u>1986</u>	<u>DEPTH</u>	<u>Wt</u>	<u>FV</u>	<u>PV</u>	<u>YP</u>	<u>GEL</u> <u>STR</u>	<u>pH</u>	<u>Fi1</u>	<u>FC</u>	<u>CL</u>	<u>Ca</u>	<u>%</u> <u>SOL</u>	<u>COMMENTS</u>
8/27	Spud	8.34	26	--	--	--	7	--	--	250	120	--	Spud mud
8/28	62'	8.34	26	--	--	--	11	--	--	250	190	--	Water
8/29	830'	8.4	27	5	1	0/2	9	24	2/32	350	80	.8	Gel/Lime/Water
8/30	2305'	8.9	31	7	4	3/5	9	20	2/32	400	80	4	Gel/Lime/Water
8/31	2305'	8.34	26	--	--	--	--	--	--	300	160	--	Water
9/1	3080'	8.4	26	--	--	--	8	--	--	380	180	--	Water
9/2	3920'	8.4	26	--	--	--	--	--	--	380	180	--	Water
9/3	4280'	8.4	26	--	--	--	--	--	--	380	180	--	Water
9/4	5080'	8.5	28	--	--	--	10	--	--	400	60	--	Water/Chem
9/5	5586'	9.2	34	6	9	4/12	12	--	2/32	700	0	5.5	Mud up
9/6	5638'	9.6	35	10	9	5/13	12	21.8	2/32	700	0	8.5	LSND
9/7	5850'	9.6	36	12	12	9/17	11	9.7	2/32	800	20	9	LSND
9/8	5980'	11.2	39	13	17	9/21	12.5	9.3	2/32	800	20	21.5	LSND
9/9	6093'	11.3	43	14	22	13/24	12	9.8	2/32	940	180	22	LSND
9/10	6380'	11.0	46	14	27	14/29	11	11.2	2/32	2100	140	20	Bar/Gel/Chem
9/11	6380'	11.1	45	14	26	14/27	11.5	11.0	2/32	2200	140	20	Bar/Gel/Chem
9/12	6380'												Plug well

FORMATION TOPS

KB = 5826'

<u>FORMATION</u>	<u>SAMPLE</u>	<u>E-LOG</u>	<u>SUBSEA</u>	<u>THICKNESS</u>
PENNSYLVANIAN PERIOD				
Hermosa Group (Honaker Trail Formation)	4950'	4960'	+866	1046'
PARADOX FORMATION				
Upper Ismay Zone	5992'	6006'	-180	115'
Upper Ismay Porosity	6112'	6118'	-292	33'
Hovenweep Shale Zone	6154'	6151'	-325	31'
Lower Ismay Zone	6181'	6182'	-356	42'
Gothic Shale Zone	6228'	6224'	-398	30'
Desert Creek Zone	6256'	6254'	-428	50'
Lower Desert Creek Porosity	6304'	6304'	-478	16'
Chimney Rock Shale Zone	6326'	6320'	-494	26'
Akah Zone	6350'	6346'	-520	31'
Salt	6378'	6377'	-551	
T.D.	6380'	6379'		

STRUCTURAL/STRATIGRAPHIC COMPARISON W/OFFSETS

	R.T. Duncan #1-13 Grynberg Sec. 13-37S-23E San Juan Co., UT			Skyline Oil #2-34 Mustang Sec. 2-37S-23E San Juan Co., UT			MOOR #1-20 Federal Sec. 20-37S-24E San Juan Co., UT		
	Ground Level 5816' K.B. Elev. 5826'			Ground Level 5854' K.B. Elev. 5841'			Ground Level 5649' K.B. Elev. 5662'		
<u>FORMATION TOPS</u>	<u>LOG</u>			<u>LOG</u>			<u>LOG</u>		
	<u>TOP</u>	<u>SUBSEA</u>	<u>h</u>	<u>TOP</u>	<u>SUBSEA</u>	<u>h</u>	<u>TOP</u>	<u>SUBSEA</u>	<u>h</u>
PENNSYLVANIAN PERIOD									
Hermosa Group	4960'	+866	1046	4892'	(+962)	1077			
PARADOX FORMATION									
Upper Ismay Zone	6006'	-180	115	5969'	(-115)	105	5807'	-145	102
Upper Ismay Porosity	6118'	-292	33	6074'	(-220)	28	5909'	-247	79
Hovenweep	6151'	-325	31	6102'	(-248)	18	5988'	-326	29
Lower Ismay	6182'	-356	42	6120'	(-266)	52	6017'	-355	41
Gothic Shale	6224'	-398	30	6172'	(-318)	28	6058'	-396	28
Desert Creek	6254'	-428	50				6086'	-424	54
Lower Desert Creek Porosity	6304'	-478	16	6260'	(-346)	20	6140'	-478	15
Chimney Rock	6320'	-494	26	6280'	(-426)		6155'	-493	
Akah	6346'	-520	31						

STRUCTURAL/STRATIGRAPHIC COMPARISON W/OFFSETS

	R.T. Duncan #1-13 Grynberg Sec. 13-37S-23E San Juan Co., UT			Skyline Oil #2-34 Mustang Sec. 2-37S-23E San Juan Co., UT			MOOR #1-20 Federal Sec. 20-37S-24E San Juan Co., UT		
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<u>FORMATION TOPS</u>	<u>LOG</u>			<u>LOG</u>			<u>LOG</u>		
	<u>TOP</u>	<u>SUBSEA</u>	<u>h</u>	<u>TOP</u>	<u>SUBSEA</u>	<u>h</u>	<u>TOP</u>	<u>SUBSEA</u>	<u>h</u>
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LOGS RUN

Dual Induction/SFL with Gamma Ray and S.P.
Base of Surface Casing to Total Depth

Litho-Density/Compensated Neutron with Gamma Ray and Caliper
4800' to Total Depth

Bore Hole Compensated Sonic with Gamma Ray and Caliper
Base of Surface Casing to Total Depth

Cyberlook
5900' to Total Depth

EVALUATION OF LOG QUALITY

All logs are of generally good quality. No hole problems and no logging tool problems existed during logging operations. Logging personnel were very professional and performed their jobs well.

LOG CALCULATIONS

UPPER ISMAY ZONE

<u>DEPTH</u>	<u>ϕ_S</u>	<u>ϕ_N</u>	<u>ϕ_D</u>	<u>AVE ϕ</u>	<u>F</u>	<u>Rt</u>	<u>Rwa</u>	<u>Rw</u>	<u>Ro</u>	<u>Sw %</u>
6128'	.04	.04	.02	.033	900	160	.178	.04	36	47
6130'	.03	.02	.02	.023	1837	225	.123	.04	73.5	57
6132'	.03	.02	.02	.023	1837	175	.095	.04	75.5	65
6140'	.055	.01	.025	.03	1111	160	.014	.04	44.4	53
6142'	.025	.01	.01	.015	4444	175	.039	.04	177.8	100

DESERT CREEK ZONE

6263'	.12	.17	.05	.113	77.9	22	.283	.035	2.72	35
6265'	.115	.12	.05	.095	110.8	22	.199	.035	3.88	42

LOWER DESERT CREEK ZONE

6307'	.10	.15	.07	.107	87.9	17	.193	.035	3.08	43
6308'	.095	.14	.07	.102	96.8	19	.196	.035	3.39	42
6309'	.085	.13	.05	.088	129	19	.147	.035	4.52	49
6310'	.09	.11	.04	.08	156	17	.109	.035	5.47	57

LOG CALCULATIONS

UPPER ISMAY ZONE

<u>DEPTH</u>	<u>ϕ_S</u>	<u>ϕ_N</u>	<u>ϕ_D</u>	<u>AVE ϕ</u>	<u>F</u>	<u>Rt</u>	<u>Rwa</u>	<u>Rw</u>	<u>Ro</u>	<u>Sw %</u>
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6132'	.03	.02	.02	.023	1837	175	.095	.04	75.5	65
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FORMULAS AND ASSUMPTIONS USED IN CALCULATIONS

1. Sonic Porosity, ϕ_S
 - a.
$$\frac{\Delta t - \Delta t_{ma}}{\Delta t_{ma} - \Delta t_f}$$
 where $\Delta t_{ma} = 4.76 \text{ sec/ft}$ and $\Delta t_f = 189.0 \text{ sec/ft}$
 - b. Sonic ϕ valid for clean formations
2. Neutron Porosity, ϕ_N
 - a. Limestone matrix was run for Ismay zones
 - b. Dolomite matrix was run for Desert Creek zones
3. Density Porosity, ϕ_D
 - a.
$$\phi_D = \frac{p_{ma} - p_b}{p_{ma} - p_f}$$
 where $p_{ma} = 2.87$ for Desert Creek
 $p_{ma} = 2.71$ for Ismay zones
 $p_b = \text{formation bulk density}$
 $p_f = 1.0 \text{ fresh mud}$
4. Average ϕ
 - a. Cross plot N/D and sonic averages
5. Formation Resistivity Factor, F
 - a. $F = 1/\phi^2$ for carbonates
 - b. F is sonic, neutron and density derived
6. True Formation Resistivity, R_t
 - a. R_t assumed to equal to RDLL (valid for little or no invasion, thick beds, and clean formations).
7. Resistivity of Apparent Formation Water, R_{wa}
 - a. $R_{wa} = R_t/F$
 - b. $R_{wa} - R_w$ then $S_w = 100\%$
 - c. Quicklook for hydrocarbon detection
8. Resistivity of Formation Water, R_w
 - a. $R_w = 0.04 \text{ OHMS}$ for Ismay zones
 - b. $R_w = 0.035 \text{ OHMS}$ for Desert Creek zones
9. Resistivity of Formation Wet Resistivity, R_o
 - a. $R_o = (FR_w)$
 - b. $R_o = R_t$ in wet zones
 - c. Quick look for hydrocarbon detection.
10. Water Saturation, S_w
 - a.
$$S_w = \sqrt{\frac{FR_w}{R_t}} \quad \text{or} \quad \sqrt{\frac{R_o}{R_t}}$$

FORWARD TO SAMPLE DESCRIPTIONS

Samples are described based on a personal format which will be provided upon request.

Samples have been lagged to corresponding depths and matched as close as possible to electric log depths.

Sample quality has been noted in parenthesis following each sample description. (1) denotes good samples, (2) denotes fair samples, and (3) denotes poor samples.

- 4500' - 4550' 20% Sandstone: Light gray predominately clear, fine grained to medium grained, predominately unconsolidated, moderately sorted, no shows. (3)
80% Shale: Reddish brown, brick red, reddish orange, blocky to subplaty, silty in part, calcareous, soft to moderately firm.
- 4550' - 4600' 70% Shale: Brick red, reddish orange, brownish red, blocky to scattered splintery, noncalcareous to slightly limy in part, silty in part, subwaxy in part. (3)
20% Siltstone: Red, blocky, slightly sandy in part, calcareous in part, soft to moderately firm.
10% Sandstone: Light pink, white, gray, clear, fine grained to medium grained, unconsolidated grains, sub-rounded, calcareous, no shows.
- 4600' - 4620' 30% Sandstone: Clear, white, light pink, predominately medium grained unconsolidated, calcareous, no shows. (3)
70% Shale: Predominately reddish orange, blocky to splintery, noncalcareous to calcareous, silty in part.
- 4620' - 4700' 70% Shale: Brick red, reddish orange, dark red, blocky to splintery, scattered calcareous, soft to moderately firm, scattered silty in part. (3)
20% Siltstone: Orange to red, shaly in part, calcareous in part, soft to moderately firm.
10% Sandstone: Clear, light gray, fine to medium grained unconsolidated in part.
- 4700' - 4730' 60% Shale: Brick red, reddish orange, scattered medium gray, blocky, calcareous, silty in part. (3)
20% Sandstone: Clear, light gray, light pink, very fine grained to scattered medium grained, subrounded to sub-angular, poor to moderately sorted, calcareous.
20% Siltstone: Red, blocky, shaly in part, soft.
- 4730' - 4780' 70% Shale: Medium gray, reddish orange, blocky, calcareous, scattered limy in part, silty in part, soft to moderately firm. (3)
10% Sandstone: Clear, light pink, subrounded to sub-angular, poorly sorted, scattered unconsolidated.

- 4730' - 4780'
(continued) 10% Siltstone: Red, blocky, shaly in part.
10% Limestone: Light pink, pinkish brown, dense, shaly in part.
- 4780' - 4820' 70% Shale: Red, reddish orange, scattered medium gray, blocky to subsplintery, calcareous, silty in part. (3)
20% Sandstone: Clear, light gray, light pink, fine grained, scattered medium grained, calcareous, scattered silty to slightly shaly in part.
20% Siltstone: Red, soft, blocky, calcareous.
- 4820' - 4860' 60% Shale: Reddish orange, dark red, blocky to splintery, calcareous, silty in part.
20% Siltstone: Red, soft, calcareous, shaly in part.
10% Limestone: Light brown, light pink, dense.
10% Sandstone: White, light gray, clear, very fine grained to fine grained, subangular, poorly sorted, calcareous.
- 4860' - 4890' 20% Sandstone: Light gray, clear, medium gray, very fine grained to medium grained, subangular to subrounded, silty to shaly in part. (3)
60% Shale: Orange, red, scattered gray, blocky to splintery, slightly limy in part, scattered noncalcareous, soft to moderately firm.
20% Siltstone: Red to orange, scattered medium gray, blocky, slightly sandy in part.
- 4890' - 4930' 70% Shale: Reddish orange to gray, blocky to splintery, calcareous to slightly limy in part, silty in part. (3)
10% Limestone: Light gray, light pink, dense, crypto-crystalline.
10% Sandstone: Light gray, clear, fine to medium grained, subrounded, calcareous, silty to shaly in part.
10% Siltstone: Red, blocky, calcareous, shaly in part.
- 4930' - 4950' 40% Limestone: Light brown, creamy pink, dense, argillaceous to slightly shaly in part, moderately firm, scattered sandy in part. (3)
50% Shale: Red, blocky to splintery in part, calcareous to limy in part, soft to moderately firm.
10% Sandstone: Light gray to clear, medium gray, fine grained calcareous, moderately sorted, clay filled.

HERMOSA GROUP (sample top 4950'; E-log 4960')

- 4950' - 5000' 40% Limestone: Light brown, grayish brown, light gray, cryptocrystalline to microcrystalline, scattered slightly shaly in part, scattered fossils. (3)
60% Shale: Dark brown, dark grayish brown, blocky, moderately firm, calcareous in part, slightly limy in part.

- 5000' - 5030' 50% Shale: Dark brownish gray, dark red, blocky, calcareous in part to limy in part. (3)
 50% Limestone: Light gray, creamy white, light brown, cryptocrystalline to microcrystalline, shaly in part.
- 5030' - 5050' 60% Shale: Reddish brown, dark reddish brown, medium gray, micaceous in part, blocky to scattered platy in part, soft silty in part. (3)
 40% Limestone: Light brown, light gray to creamy white, shaly in part.
- 5050' - 5080' 30% Sandstone: Clear, light gray, silty in part, very fine grained, clay filled, calcareous, slightly to moderately micaceous, subrounded. (3)
 60% Shale: Medium to scattered dark gray, dark reddish brown, greenish gray, silty in part, blocky, soft, calcareous to scattered limy, slightly micaceous.
 10% Limestone: Gray, light brown, creamy white, dense, cryptocrystalline scattered fossils.
- 5080' - 5120' 50% Shale: Medium to scattered dark gray, dark reddish brown, silty in part, blocky, soft, calcareous to limy in part, scattered micaceous. (3)
 40% Limestone: Light brownish gray to creamy white, dense, scattered fossils.
 10% Sandstone: Clear, gray, clay filled, tight, slightly micaceous, calcareous.
- 5120' - 5170' 50% Limestone: Light brown, light gray, light grayish brown, scattered creamy white, dense, cryptocrystalline, slightly argillaceous in part, scattered fossils, slightly sandy in part, no visible porosity. (3)
 50% Shale: Dark brown to gray, blocky, soft to moderately firm, calcareous to limy in part.
- 5170' - 5200' 70% Shale: Dark brown, gray, scattered dark gray, blocky scattered splintery, soft to scattered firm, calcareous to limy in part. (3)
 30% Limestone: Light brownish gray, medium gray to creamy white, cryptocrystalline, slightly argillaceous in part, scattered fossils, dense, no visible porosity, no shows.
- 5200' - 5230' 80% Shale: Dark brown, reddish brown, gray, blocky, soft to moderately firm, calcareous, scattered noncalcareous, limy in part, silty to very silty in part, micaceous in part. (3)
 10% Limestone: Light to medium brown, slightly argillaceous in part, no visible porosity.
 10% Sandstone: White, light gray to clear, very fine grained to fine grained, subrounded, calcareous, clay filled, tight, micaceous.

- 5230' - 5280' 70% Shale: Dark brown, red, brown, dark gray, blocky to splintery, moderately firm to scattered firm, calcareous to limy in part, silty in part. (3)
30% Limestone: Creamy white, light gray, light brown, dense, cryptocrystalline, argillaceous in part, no visible porosity.
- 5280' - 5320' 70% Shale: Dark brown to medium brown to scattered gray, blocky, soft, scattered moderately firm, calcareous. (3)
20% Limestone: Light grayish brown, dense, cryptocrystalline, argillaceous in part, scattered fossils.
10% Sandstone: Light gray to clear, very fine grained to fine grained, subangular, clay filled, no visible porosity, no shows.
- 5320' - 5330' 60% Limestone: Light grayish brown, light gray to creamy white, dense, argillaceous, scattered fossils, no shows. (3)
40% Shale: Brown, scattered gray, blocky to splintery, soft to moderately firm, calcareous to slightly limy in part.
- 5330' - 5380' 40% Sandstone: Light to medium gray to white, very fine grained to fine grained, trashy, micaceous, subangular to subrounded, calcareous, poorly sorted, clay filled, tight, limy in part. (3)
50% Shale: Dark reddish brown, blocky, calcareous to limy in part.
10% Limestone: Cream white, light gray, slightly sandy in part, dense, scattered fossils.
- 5380' - 5410' 60% Shale: medium gray, reddish brown, blocky to splintery in part, calcareous to slightly limy in part. (3)
40% Limestone: Light gray, light brownish gray, dense, cryptocrystalline, no shows.
- 5410' - 5420' 40% Sandstone: Clear, light gray, trashy, micaceous, very fine grained to fine grained, calcareous, poorly sorted, tight. (3)
50% Shale: Dark reddish brown, blocky, silty to sandy, limy.
10% Limestone: Light brownish gray, microcrystalline, argillaceous, slightly sandy in part.
- 5420' - 5450' 60% Shale: Medium gray to dark brown, blocky, soft to moderately firm, limy in part, silty in part. (3)
40% Limestone: Light brown, light gray, microcrystalline, dense, argillaceous in part, no visible porosity, no shows.

- 5450' - 5470' 50% Shale: Medium to dark gray, blocky to splintery, moderately firm to scattered firm, slightly limy in part. (3)
 50% Limestone: Light to medium gray, microcrystalline to cryptocrystalline, slightly sandy in part, no shows, cherty.
- 5470' - 5500' 70% Shale: Gray to dark gray, blocky, calcareous to limy, moderately firm. (3)
 30% Limestone: Light gray; light brown, cryptocrystalline to microcrystalline, dense, argillaceous, scattered clear, cherty.
- 5500' - 5540' 60% Limestone: White, light brown to dark brown, cryptocrystalline to microcrystalline, fossils in part, cherty in part. (3)
 40% Shale: Light to medium gray, blocky, moderately firm, calcareous to limy.
- 5540' - 5560' 80% Limestone: Light gray, light brown, creamy white, clean to slightly argillaceous in part, cryptocrystalline, no visible porosity, scattered chert, no shows. (3)
 20% Shale: Medium to light gray, blocky, calcareous to limy in part, moderately firm.
- 5560' - 5610' 50% Shale: Medium to dark gray, blocky to splintery, moderately firm to firm, calcareous to slightly limy in part. (3)
 50% Limestone: Light to medium gray, microcrystalline to cryptocrystalline, argillaceous in part, no visible porosity, scattered clean limy, no shows.
- 5610' - 5640' 80% Shale: Dark gray to black, splintery to blocky, moderately firm to firm, scattered calcareous to non-calcareous, scattered limy in part. (3)
 20% Limestone: Light brown, light gray, cryptocrystalline, scattered fossils, dense, argillaceous, no shows.
- 5640' - 5680' 50% Shale: Medium to dark gray, splintery to blocky, moderately firm to soft, slightly calcareous to calcareous. (3)
 50% Limestone: Light to medium gray, light to medium brown, dense, clean to slightly argillaceous, fossils, cryptocrystalline, no visible porosity.
- 5680' - 5700' 80% Limestone: Light to medium brown, cryptocrystalline, dense, clean to slightly argillaceous, fossils, scattered chert, traces pyrite, no shows. (3)
 20% Shale: Dark gray, dark brown, blocky to splintery, limy, moderately firm.
- 5700' - 5760' 70% Shale: Dark gray to black, splintery to blocky, slightly silty in part, moderately firm, calcareous to slightly limy. (3)

- 5700' - 5760'
(continued) 30% Limestone: Light brownish gray, microcrystalline, slightly argillaceous, no visible porosity, no stain.
- 5760' - 5800' 60% Shale: Dark gray, scattered medium gray to black, blocky to splintery, moderately firm to firm, silty in part, slightly calcareous. (3)
40% Limestone: Light to medium brown, white to light brown, microcrystalline to cryptocrystalline, argillaceous in part, dense.
- 5800' - 5840' 50% Shale: Light to medium gray, scattered dark gray, blocky to splintery, moderately firm to soft, calcareous to limy in part. (3)
50% Limestone: Creamy white to light brown, cryptocrystalline to microcrystalline, slightly argillaceous, scattered fossils, no visible porosity, no shows.
- 5840' - 5850' 70% Shale: Medium to dark gray, splintery, moderately firm, scattered calcareous to limy in part. (3)
30% Limestone: White to light brown, microcrystalline, argillaceous, dense.
- 5850' - 5900' 50% Shale: Dark brownish gray, blocky to splintery, moderately firm to firm, slightly silty in part. (3)
50% Limestone: medium to light brown, cryptocrystalline, slightly argillaceous, scattered chert, no visible porosity, no shows.
- 5900' - 5940' 60% Limestone: Medium brown, tan, gray, cherty, cryptocrystalline to microcrystalline, dense, clean to slightly argillaceous, no visible porosity, no stain, no shows. (3)
40% Shale: Medium to dark gray, splintery to blocky, calcareous.
- 5940' - 5990' 70% Limestone: Light to medium grayish brown, microcrystalline to cryptocrystalline, dense, abundant visible calcite crystals, fractures, oil stain in fractures and around crystals, light green oil on mud tanks, argillaceous in part. (3)
30% Shale: Medium gray, splintery to blocky, moderately firm to firm, slightly limy in part.
- 5990' - 6000' 70% shale: Dark gray, splintery, subplaty, moderately firm, silty in part, limy in part. (3)
30% Limestone: Medium to dark gray, firm, microcrystalline, argillaceous in part, no visible porosity.
- UPPER ISMAY ZONE (sample top 5992'; E-log 6006')
- 6000' - 6010' 80% Limestone: Medium gray to grayish brown, microcrystalline to cryptocrystalline, very argillaceous, no visible porosity. (3)
20% Shale: Dark gray, blocky to splintery, limy in part, moderately firm to soft.

6010' - 6050' 50% Limestone: Medium brown, medium to dark gray, cryptocrystalline to microcrystalline, anhydritic in part, tight, slightly argillaceous, no shows. (3)
40% Shale: Medium to dark gray, medium brownish gray, moderately firm, calcareous.
10% Anhydrite: White, cream, soft.

6050' - 6120' 30% Anhydrite: White, creamy white, soft. (3)
40% Shale: Light to medium grayish brown, scattered medium to dark gray, blocky, moderately firm, limy in part, scattered silty in part.
30% Limestone: Light to medium brownish gray, cryptocrystalline, anhydritic in part, argillaceous in part, no visible porosity, no shows.

6120' - 6150' 60% Limestone: Light brown, scattered light gray to white, light to medium brown, microcrystalline to micro-sucrosic, dolomitic in part, anhydritic, argillaceous in part, tight, no visible porosity, no stain, no cut. (3)
40% Shale: Medium to dark gray, blocky to splintery, moderately firm.

HOVENWEEP SHALE (sample top 6154'; E-log 6151')

6150' - 6180' 80% Shale: Black, dark gray, splintery to platy, moderately firm, slightly calcareous to limy in part, silty in part, earthy. (2)
20% Limestone: Light to medium grayish brown, cryptocrystalline, dense, slightly argillaceous and anhydritic, no visible porosity.

LOWER ISMAY ZONE (sample top 6181'; E-log 6182')

6180' - 6200' 40% Limestone: Medium to dark grayish brown, microcrystalline to cryptocrystalline, slightly argillaceous, no visible porosity, no stain, no show, anhydritic in part. (2)
40% Shale: Medium to dark gray, splintery to platy, earthy, calcareous.
20% Anhydrite: Cream white, soft.

6200' - 6210' 30% Anhydrite: White. (2)
60% Shale: Medium to dark gray, splintery to platy, scattered blocky, soft to moderately firm, calcareous, earthy.
10% Limestone: Medium to light brown, argillaceous, cryptocrystalline, dolomitic and anhydritic, no visible porosity.

6210' - 6220' 50% Limestone: Medium brown, microsucrosic to microcrystalline, dolomitic in part, argillaceous, anhydritic, no shows. (2)
50% Shale: Medium gray, splintery, soft, calcareous in part.

GOTHIC SHALE (sample top 6228'; E-log 6224')

6220' - 6250' 80% Shale: Black, dark gray, platy to blocky, soft to moderately firm, slightly calcareous, earthy, carbonaceous in part. (2)
20% Limestone: Brownish gray, anhydritic in part, argillaceous in part, microcrystalline to microsucrosic, dense, no shows.

DESERT CREEK (sample top 6256'; E-log 6254')

6250' - 6280' 50% Dolomite: Light to medium brown, sucrosic to granular, tight, dense, anhydritic in part, limy in part, argillaceous in part, dark brown stain, poor visible intercrystalline porosity, no fluorescence, no cut. (2)
40% Shale: Dark gray, black, blocky, soft, calcareous, earthy.
10% Anhydrite: White, soft.

6280' - 6300' 60% Dolomite: Medium brownish gray, dense, anhydritic in part, argillaceous, microcrystalline, no visible porosity.
20% Anhydrite: Creamy white, soft to crystalline. (2)
20% Shale: Dark gray to black, splintery to blocky, soft to moderately firm, earthy.

LOWER DESERT CREEK (sample top 6304'; E-log 6304')

6300' - 6320' 70% Dolomite: Light brown, microsucrosic to sucrosic, limy in part, argillaceous in part, scattered black stain with faint light yellow fluorescence and slow light yellow bleeding cut, scattered anhydritic infilling, poor intercrystalline porosity, tight. (2)
30% Shale: Dark gray, blocky to splintery, soft to scattered moderately firm, slightly calcareous, earthy in part.

CHIMNEY ROCK SHALE (sample top 6326'; E-log 6320')

6320' - 6350' 70% Shale: Black, dark gray, platy to splintery, earthy, soft to moderately firm, calcareous. (2)
30% Dolomite: Dark brown to dark grayish brown, cryptocrystalline to microcrystalline, dense, anhydritic in part, no visible porosity.

AKAH (sample top 6350'; E-log 6346')

6350' - 6370' 60% Dolomite: Medium to dark brown, cryptocrystalline to microcrystalline, dense, slightly argillaceous, slightly anhydritic in part, no visible porosity, no stain, no cut, limy in part. (2)
40% Shale: Medium to dark gray, black, blocky to splintery, earthy, slightly calcareous, anhydritic.

6370' - 6380'

20% Anhydrite: White, soft.

60% Dolomite: Medium to dark brown, dark grayish brown, microcrystalline to cryptocrystalline, argillaceous to slightly shaly in part, moderately firm to soft.

20% Shale: Dark gray to black, platy to splintery, moderately firm to soft, slightly limy in part.

Salt: By interpretation.

SUMMARY

PROSPECT OVERVIEW

The Raymond T. Duncan No. 1-13 Grynberg Federal was drilled to a total depth of 6379' (e-log) as a wildcat to explore a seismic high in the Upper Ismay and Lower Desert Creek Zones of the Pennsylvanian Paradox Formation.

FORMATION SUMMARY

Hermosa Group of the Honaker Trail Formation (5960' - 5964')

This 4 foot interval was highly fractured and consisted of a dark grayish brown to medium brown microcrystalline limestone. Evidence of fractures were present by abundant oil lined calcite crystals and observed calcite filled small fractures in small shale nodules present in the limestone. Bit torque also was present while drilling this interval indicating fractures. A large gas kick also was observed; gas peaked at 1,440 units total gas, increasing from a background of 3 units. Chromatograph breakdown during the peak were 588 units of C₁, 468 units of C₂, 504 units of C₃, 132 units IC₄, 240 units of NC₄, 60 units of C₅ and 60 units of C₆ and traces of C₇. The presence of the heavier gases indicate the existence of oil in this interval. A light green to light goldish yellow oil was observed on top of the mud tanks and reserve pit. The well was shut in to control this gas kick. Mud weight was increased from 9.6 to 11.1 lb/gallon to hold back this zone. This indicates that the fractures are highly pressured (over 3600 psi). The rest of the drilling of this well was drilled with gas cut mud. Trip gas from this interval was over 6000 units and 100 unit increases were noticed from connections. The electric logs also indicate the fractured nature of this interval.

Upper Ismay Zone (6140' - 6144')

This thin limestone was a light brown, microsugrosic, slightly dolomitic, argillaceous tight limestone. A small increase in gas was observed (about 70 units) while drilling this interval. No visible porosity and no fluorescence and cut was observed from examination of samples.

Desert Creek Zone (6261' - 6267')

This tight light grayish brown dolomite was microcrystalline to micro-sugrosic with poor visible intercrystalline porosity and only traces of

Desert Creek Zone (continued)

scattered dark brown stain with no fluorescence and cut. A 90 unit gas increase was noted over background. Argillaceous and scattered anhydrite infilling limited any potential in this interval. The e-logs revealed this zone to be thin and not very clean.

Lower Desert Creek Carbonate (porosity) (6304' - 6309')

The dolomites of this interval were light brown, microsugrosic to sugrosic and were argillaceous to anhydritic with poor intercrystalline porosity. Scattered black dead oil stain was observed with a faint light yellow fluorescence and slow light yellow bleeding cut was observed from examination of samples. A 140 unit gas increase over background was noted (background gas was 65 units). From the electrical logs this tight, thin zone was confirmed.

POST DRILLING COMMENTS

A final examination of all possible zones penetrated through the Paradox Formation (Isma and Desert Creek) at this location reveals that no significant zones with enough porosity, permeability and hydrocarbons to justify the running of production casing. It is apparent that at this location the well was either on the nose or on the flank of any bioherm mound.

The Lower Hermosa Carbonate Fractured Zone was considered to be too thin to run pipe. If conditions in the industry change economically, this fracture play may become financially feasible in the future. The decision was made to plug the well and abandon the location.

090426

CONFIDENTIAL

DIVISION OF OIL, GAS AND MINING

SPODDING INFORMATION

API #43-037-31273

NAME OF COMPANY: RAYMOND DUNCAN

WELL NAME: GRYNBERG FEDERAL 1-13

SECTION SW NE 13 TOWNSHIP 37S RANGE 23E COUNTY San Juan

DRILLING CONTRACTOR Exeter

RIG #

SPODDED: DATE 8-27-86

TIME 3:00 PM

How

DRILLING WILL COMMENCE

REPORTED BY Karen Bond

TELEPHONE # (303) 759-3303

DATE 8-28-86 SIGNED BJH

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

Form Approved.
Budget Bureau No. 42-R1424

SUNDRY NOTICES AND REPORTS ON WELLS

(Do not use this form for proposals to drill or to deepen or plug back to a different reservoir. Use Form 9-331-C for such proposals.)

1. oil ☒ well gas ☐ well other ☐
2. NAME OF OPERATOR
Raymond T. Duncan
3. ADDRESS OF OPERATOR
1777 S. Harrison St., P-1, Denver, CO 80210
4. LOCATION OF WELL (REPORT LOCATION CLEARLY. See space 17 below.)
AT SURFACE: 2580' FNL & 2610' FEL (SW NE)
AT TOP PROD. INTERVAL:
AT TOTAL DEPTH: Same

16. CHECK APPROPRIATE BOX TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA

REQUEST FOR APPROVAL TO:		SUBSEQUENT REPORT OF:	
TEST WATER SHUT-OFF	<input type="checkbox"/>		<input type="checkbox"/>
FRACTURE TREAT	<input type="checkbox"/>		<input type="checkbox"/>
SHOOT OR ACIDIZE	<input type="checkbox"/>		<input type="checkbox"/>
REPAIR WELL	<input type="checkbox"/>		<input type="checkbox"/>
PULL OR ALTER CASING	<input type="checkbox"/>		<input type="checkbox"/>
MULTIPLE COMPLETE	<input type="checkbox"/>		<input type="checkbox"/>
CHANGE ZONES	<input type="checkbox"/>		<input type="checkbox"/>
ABANDON*	<input type="checkbox"/>		<input type="checkbox"/>
(other) <u>Notification of Spud</u>			

17. DESCRIBE PROPOSED OR COMPLETED OPERATIONS (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work. If well is directionally drilled, give subsurface locations and measured and true vertical depths for all markers and zones pertinent to this work.)*

Subject well spud at 3:00 p.m. on August 27, 1986.

Duncan respectfully requests that all information pertaining to this well be kept in TIGHT HOLE-CONFIDENTIAL INFORMATION status for the maximum allowable period.

RECEIVED
SEP 02 1986

**DIVISION OF
OIL, GAS & MINING**

Subsurface Safety Valve: Manu. and Type _____ Set @ _____ Ft.

18. I hereby certify that the foregoing is true and correct

SIGNED J. A. Bettridge TITLE Operations Supt. DATE August 28, 1986

(This space for Federal or State office use)

APPROVED BY _____ TITLE _____ DATE _____
CONDITIONS OF APPROVAL, IF ANY:

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

SUBMIT IN DUPLICATE

100114
CONFIDENTIAL:
TIGHT HOLELEASE IDENTIFICATION AND SERIAL NO.
U-46825

WELL COMPLETION OR RECOMPLETION REPORT AND LOG

1a. TYPE OF WELL: OIL WELL <input type="checkbox"/> GAS WELL <input type="checkbox"/> DRY <input checked="" type="checkbox"/> Other _____				6. IF INDIAN, ALLOTTEE OR TRIBE NAME N/A	
b. TYPE OF COMPLETION: NEW WELL <input type="checkbox"/> WORK OVER <input type="checkbox"/> DEEP-EN <input type="checkbox"/> PLUG BACK <input type="checkbox"/> DIFF. RESVR. <input type="checkbox"/> Other <u>P & A</u>				7. UNIT AGREEMENT NAME N/A	
2. NAME OF OPERATOR <u>Raymond T. Duncan</u>				8. FARM OR LEASE NAME <u>Grynberg Federal</u>	
3. ADDRESS OF OPERATOR <u>1777 S. Harrison St., P-1, Denver, CO 80210</u>				9. WELL NO. <u>No. 1-13</u>	
4. LOCATION OF WELL (Report location clearly and in accordance with any State requirements) At surface <u>2580' FNL & 2610' FEL SW NE</u> At top prod. interval reported below At total depth <u>Same</u>				10. FIELD AND POOL, OR WILDCAT <u>Wildcat</u>	
14. PERMIT NO. <u>43-037-31273</u>				DATE ISSUED <u>8-14-86</u>	
15. DATE SPUDDED <u>8-27-86</u>		16. DATE T.D. REACHED <u>9-10-86</u>		17. DATE COMPL. (Ready to prod.) <u>9-11-86 - P & A</u>	
18. ELEVATIONS (DF, RKB, RT, GR, ETC.) <u>5821' GR</u>		19. ELEV. CASINGHEAD			
20. TOTAL DEPTH, MD & TVD <u>6380'</u>		21. PLUG, BACK T.D., MD & TVD		22. IF MULTIPLE COMPL., HOW MANY	
23. INTERVALS DRILLED BY <u>0-6380'</u>		ROTARY TOOLS		CABLE TOOLS	
24. PRODUCING INTERVAL(S), OF THIS COMPLETION—TOP, BOTTOM, NAME (MD AND TVD) <u>P & A</u>				25. WAS DIRECTIONAL SURVEY MADE <u>No</u>	
26. TYPE ELECTRIC AND OTHER LOGS RUN <u>Dual Induction, CNL-FDC/GR, BHCA/GR</u>				27. WAS WELL CORED <u>No</u>	
28. CASING RECORD (Report all strings set in well)					
CASING SIZE	WEIGHT, LB./FT.	DEPTH SET (MD)	HOLE SIZE	CEMENTING RECORD	AMOUNT PULLED
<u>8-5/8"</u>	<u>24#</u>	<u>2304'</u>	<u>12-1/4"</u>	<u>450 sx Class "G"</u>	
29. LINER RECORD					
SIZE	TOP (MD)	BOTTOM (MD)	SACKS CEMENT	SCREEN (MD)	
30. TUBING RECORD					
SIZE	DEPTH SET (MD)	PACKER SET (MD)			
31. PERFORATION RECORD (Flow test, size and type of gun)					
32. ACID, SHOT, FRACTURE, CEMENT SQUEEZE, ETC.					
DEPTH INTERVAL (MD)			AMOUNT AND KIND OF MATERIAL USED		
33. PRODUCTION					
DATE FIRST PRODUCTION		PRODUCTION METHOD (Flowing, gas lift, pumping—size and type of pump)			WELL STATUS (Producing or shut-in) <u>P & A</u>
DATE OF TEST	HOURS TESTED	CHOKE SIZE	PROD'N. FOR TEST PERIOD	OIL—BBL.	GAS—MCF.
FLOW. TUBING PRESS.		CASING PRESSURE	CALCULATED 24-HOUR RATE	OIL—BBL.	GAS—MCF.
34. DISPOSITION OF GAS (Sold, used for fuel, vented, etc.)		TEST WITNESSED BY			
35. LIST OF ATTACHMENTS					
36. I hereby certify that the foregoing and attached information is complete and correct as determined from all available records					

SIGNED

J. A. Bettridge

TITLE Operations SuperintendentDATE September 17, 1986

See Spaces for Additional Data on Reverse Side

100702

RECEIVED
OCT 01 1986

DIVISION OF
OIL, GAS & MINING

RAYMOND T. DUNCAN
NO. 1-13 GRYNBERG FEDERAL
SW NE SECTION 13, T37S-R23E
SAN JUAN COUNTY, UTAH

43.037.31272

WELLSITE GEOLOGY: Jim Holst
Intermountain Wellsite Geologists
P. O. Box 4007
Casper, Wyoming 82604
(307) 266-2009

TABLE OF CONTENTS

GENERAL INFORMATION

Well Data.	1
Well Location in the Prospect Area	3
Base Map of the Prospect Area.	4
Well Drilling Chronology	5
Breakdown of Rig Time.	7
Summary Drilling Data.	8
Bit Record	9
Survey Data.	10
Depth Corrections.	11
Mud Data	12

FORMATION TOPS AND E-LOG DATA

Formation Tops	13
Structural/Stratigraphic Comparison w/Offsets.	14
Log Suite.	15
Evaluation of Log Quality.	15
Log Calculations	16
Formulas and Assumptions Used in Calculations.	17

SAMPLE DESCRIPTIONS

Forward to Sample Descriptions	18
Sample Descriptions.	18

SUMMARY

Prospect Overview.	27
Formation Summary.	27
Post Drilling Comments	28

WELL DATA

OPERATOR: Raymond T. Duncan
1777 South Harrison Street
Penthouse One
Denver, Colorado 80210
(303) 759-3303
Geologist: Bob Lentz

WELL NAME: No. 1-13 Grynberg Federal

WELL LOCATION: 2580' FNL & 2610' FEL
Section 13 (SW NE)
Township 37 South, Range 23 East
San Juan County, Utah

SPUD DATE: August 27, 1986 2:00 P.M.

DATE DRILLING COMPLETED September 10, 1986 9:00 A.M.

ELEVATIONS: Ground Level: 5816'
Kelly Bushing: 5826'

SURFACE CASING: 13 3/8" set at 52' KB
8 5/8" set at 2305' KB

OPEN HOLE SIZE: 7 7/8"

TOTAL DEPTH: Driller: Pipe Tally 6380'; SLM 6383'
Logger: 6379'

DRILLING CONTRACTOR: Exeter Drilling Rig No. 68
1670 Broadway, Suite 3400
Denver, Colorado 80217
(303) 861-0181
Toolpusher: H.E. Teter
Chris Nelson

DRILLING SUPERVISION: J.A. (Arkie) Browning
P. O. Box 1058
Cortez, Colorado 81321
(303) 565-8806
Mobile: (303) 565-5000

DRILLING MUD: Summit Drilling Fluids
518 17th Street, Suite 750
Denver, Colorado 80202
(303) 572-3011
Engineer: Jimmy Dobbins

WIRELINE LOGS:

Schlumberger Well Services
200 San Juan Blvd.
P. O. Box 250
Farmington, New Mexico 87499
(505) 325-5006
Engineer: Roger Sitton

WELLSITE GEOLOGY:

Intermountain Wellsite Geologists
P. O. Box 4007
Casper, Wyoming 82604
(307) 266-2009
Geologist: Jim Holst

SAMPLES:

30' Samples Surface to 4000'
10' Samples 4000' to T.D.
1 set dry cut to Amstrat in Denver
Show samples to Duncan in Denver

PRESENT WELL STATUS:

Plug and Abandon Location

WELL LOCATIONS IN PROSPECT AREA

Township 37 South, Range 23 East, San Juan County, Utah

Section 2

* -b- Skyline South Mustang #2-34 510' FSL & 1970' FEL (SW NE)

Section 12

 ADA (NE SE)

Section 13

-6- Duncan No. 1-13 Grynberg 2580' FNL & 2610' FEL (SW NE)

Section 14

-φ- Occidental (NW SW)

Section 23

 Woods (NW SE)

Section 24

-0- Pan Am (NW SW)

ϕ Cox (SW SE)

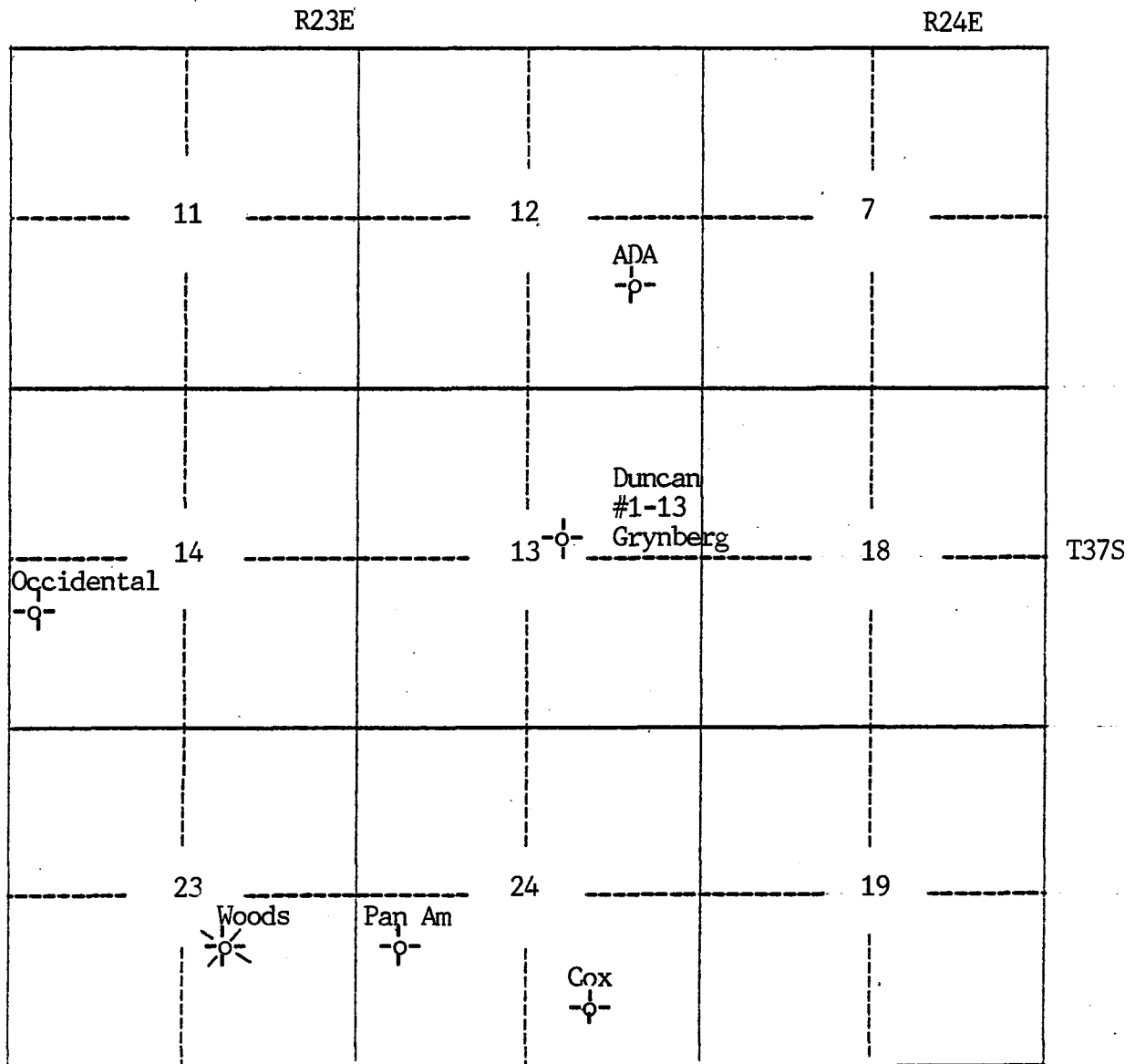
Township 37 South, Range 24 East, San Juan County, Utah

Section 20

* -o- MCOR No. 1-20 Federal 2050' FNL & 2100' FEL (SW NE)

* Offset wells used for correlation

BASE MAP OF PROSPECT AREA



San Juan County, Utah

WELL DRILLING CHRONOLOGY

NOTE: Days are described here and on the following charts based on the I.A.D.C. Daily Drilling Report from 12:00 A.M. to 12:00 A.M. M.D.T. Footage drilled and cumulative footage per day is listed in parenthesis below the date.

August 27, 1986 (0' - 92'/92')	Finish rigging up, drill rat and mouse hole. Spud well at 2:00 P.M. Drilling 17 1/4" hole with surface bit no. 1A. Drilled from grass roots to 92 feet. Circulate, drop survey and trip out of hole. Run 63.5 feet 13 3/8" 48 lbs. casing set at 52.00 feet K.B. Work casing down.
August 28, 1986 (52' - 326'/274')	Cement 13 3/8" casing with 85 sacks with 2% calcium chloride. Wait on cement, trip into hole with surface bit 2A. Drilling cement with 11" hole (49' to 82') open hole to 92'. Drilling new hole, drilled from 92' to 326'.
August 29, 1986 (326' - 1887'/1561')	Drilled from 326' to 1887'.
August 30, 1986 (1887' - 2305'/418')	Drilled from 1887' to 2305'. Circulate, drop survey and trip out of hole. Run 58 joints 24 lb. 2302.35', 8 5/8" casing set at 2304.85' K.B., cement casing with 450 sacks Class B with 6% Gel Yy LB. F/S and 155 sacks Class B with Yy LB. F/S.
August 31, 1986 (2305' - 2620'/315')	Wait on cement, nipple up, test blind rams with 1500 lbs., test pipe rams to 1000 lbs., trip into hole. Drill cement (220') with bit no. 3, drilling 7 7/8" hole. Drilled from 2305' to 2620'.
September 1, 1986 (2620' - 3594'/974')	Drilled from 2620' to 3594'.
September 2, 1986 (3594' - 4349'/755')	Drilled from 3594' to 4349'. Geologist and mudlogger on location.
September 3, 1986 (4349' - 4925'/576')	Drilled from 4349' to 4925'.
September 4, 1986 (4925' - 5260'/335')	Drilled from 4925' to 5199'. Drop survey, trip out of hole, strap out of hole, change out flow nipple, trip into hole with bit no. 4 (J22C). Drilled from 5199' to 5260'.
September 5, 1986 (5260' - 5639'/379')	Drilled from 5260' to 5639'. Drop survey, trip for bit, left cone in hole. Trip in hole with magnet and fish for lost cone.

September 6, 1986
(5639' - 5780'/141')

Fish for lost cone with magnet. Trip out of hole with part of cone. Trip in with magnet and fish for junk. Trip into hole with new bit no. 5 (J33H). Drilled from 5639' to 5780'.

September 7, 1986
(5780' - 5982'/202')

Drilled from 5780' to 5982'. Drilled fractured Hermosa. Shut in well, condition mud, control gas kick. Build up mud weight to 11.0 lb. to hold gas. Light oil on mud tanks and reserve pit.

September 8, 1986
(5982' - 6093'/111')

Condition mud. Drilled from 5892' to 6093'. Trip out of hole. Drop survey. Trip in with new bit no. 6 HTC (J-22).

September 9, 1986
(6093' - 6285'/191')

Finish tripping in hole with new bit. Drilled from 6093' to 6285'.

September 10, 1986
(6285' - 6380'/95')

Drilled from 6285' to 6380', total depth. Circulate and 10 stand short trip, circulate. Trip out of hole to run logs. Run E-logs.

September 11, 1986
(6380')

Finish running electrical logs, trip into hole. Circulate out gas and oil, get ready to set cement plugs.

September 12, 1986

Plug well with 4 cement plugs.

BREAKDOWN OF RIG TIME

<u>DATE</u> <u>1986</u>	<u>DRILL</u>	<u>WASH/ REAM</u>	<u>COND/ CIRC.</u>	<u>TRIPS</u>	<u>RIG SERV.</u>	<u>RIG REPAIR</u>	<u>SURVEY</u>	<u>LOG.</u>	<u>OTHER</u>	<u>COMMENTS</u>
8/27	7.75	-	.25	--	--	--	.25	-	15.75	Spud well, set 13 3/8" casing
8/28	10	2	--	--	--	4.5	--	-	7.5	Wait on cement
8/29	22.75	-	--	--	.25	--	1	-	--	
8/30	9.0	-	1	2.5	.25	--	1	-	10.25	Set 8 5/8" surface casing
8/31	6.5	-	--	2	--	--	.5	-	15	Nipple up
9/1	23.25	-	--	--	--	.25	.5	-	--	
9/2	23	-	--	--	.25	--	.75	-	--	
9/3	20.75	-	--	--	.25	2.25	.75	-	--	
9/4	15.75	-	--	4.5	--	3.25	.5	-	--	Trip for bit
9/5	20.0	-	--	2.5	--	--	--	-	1.5	Mud up, lost cone
9/6	8.25	-	--	6	.25	--	--	-	9.0	Fish for cone
9/7	12.25	-	11.75	--	--	--	--	-	--	Condition mud, gas kick
9/8	18.5	-	4.5	.5	.25	--	.25	-	--	Condition mud
9/9	17.5	-	--	5.5	.75	.25	--	-	--	
9/10	6.75	-	4.0	--	--	--	--	6.0	--	Run E-logs
9/11	--	-	10.5	6.5	--	--	--	3.0	4.0	Finish logging
9/12	--	-	--	--	--	--	--	-	--	Plug well

SUMMARY DRILLING DATA

<u>DATE</u> <u>1986</u>	<u>1000#</u> <u>WOB</u>	<u>RPM</u>	<u>PP</u>	<u>FOOTAGE DRILLED</u>	<u>CUMULATIVE</u> <u>FOOTAGE</u>	<u>FT/HR</u>	<u>COMMENTS</u>
8/27	ALL	120	350	0' - 92'	92'	11.9'	Set 13 3/8" casing
8/28	12/20	55	1100	52' - 326'	274'	27.4'	
8/29	40/50	65/55	1100/1300	326' - 1887'	1561'	68.6'	
8/30	45	55	1300	1887' - 2305'	418'	46.4'	Set 8 5/8" casing
8/31	28/36	80	1100	2305' - 2620'	315'	48.5'	Wait on cement
9/1	36/37	80/90	1100/1200	2620' - 3594'	974'	41.9'	
9/2	37	80/85	1200	3594' - 4349'	755'	32.8'	
9/3	37	80/85	1200	4349' - 4925'	576'	27.8'	
9/4	37/45	85/70	1300/1200	4925' - 5260'	335'	21.3'	Trip for bit
9/5	45	80	1200	5260' - 5639'	379'	19.0'	Mud up - lost cone
9/6	45	64	1100	5639' - 5780'	141'	17.1'	Control gas kick
9/7	45	65	1400/1300	5780' - 5982'	202'	16.5'	Condition mud
9/8	40	60	1200	5982' - 6093'	111'	6'	
9/9	40	60	1300	6093' - 6285'	191'	10.9'	
9/10	40	60	1300	6285' - 6380'	95'	14.1'	T.D. - Logging
9/11				6380' - 6380'			Logging
9/12				6380' - 6380'			Plug well

BIT RECORD

<u>BIT NO.</u>	<u>SIZE</u>	<u>MANUF.</u>	<u>TYPE</u>	<u>FOOTAGE RUN</u>	<u>TOTAL FTG.</u>	<u>HOURS RUN</u>	<u>FT/HR</u>	<u>DULL CODE</u>
1A	17 1/2"	STC	SDS	0' - 92'	92'	7.75	11.9'	
2A	11"	HTC	J22	92' - 2305'	2213'	41.75'	53'	4-2-I
3	7 7/8"	HTC	J22	2305' - 5199'	2894'	86.0	33.7'	4-4-I
4	7 7/8"	HTC	J22C	5199' - 5639'	440'	23	19.1'	4-8-0
5	7 7/8"	HTC	J33	5639' - 6093'	454'	37.5	12.1'	8-4-I
6	7 7/8"	HTC	J22	6093' - 6380'	<u>287'</u>	<u>24.25</u>	<u>11.8'</u>	4-4-I
					<u>6380'</u>	<u>220.25</u>	<u>29</u>	

SURVEY DATA

<u>DATE</u> <u>1986</u>	<u>SURVEY</u> <u>DEPTH</u>	<u>SURVEY</u> <u>TYPE</u>	<u>DEGREES</u> <u>DEVIATION</u>
8/27	90'	Dropped	3/4°
8/29	495'	Wireline	3/4°
8/29	961'	Wireline	3/4°
8/29	1471'	Wireline	3/4°
8/30	1960'	Wireline	1°
8/30	2271'	Dropped	2 1/2°
8/31	2558'	Wireline	1 3/4°
9/1	3124'	Wireline	1 1/4°
9/2	3878'	Wireline	1/2°
9/3	4444'	Wireline	1/2°
9/4	4935'	Wireline	3/4°
9/4	5169'	Dropped	1°
9/5	5627'	Dropped	3/4°
9/9	6093'	Dropped	1°

DEPTH CORRECTIONS

<u>DATE</u> <u>1986</u>	<u>BOARD</u> <u>DEPTH</u>	<u>S.L.M.</u> <u>DEPTH</u>	<u>CORRECTION AND COMMENTS</u>
8/30	2305'	2310'	No correction made (+5)
9/4	5199'	5200'	No correction made (+1)
9/10	6380'	6383'	No correction made (+3)

MUD DATA

<u>DATE</u> <u>1986</u>	<u>DEPTH</u>	<u>Wt</u>	<u>FV</u>	<u>PV</u>	<u>YP</u>	<u>GEL</u> <u>STR</u>	<u>pH</u>	<u>Fi1</u>	<u>FC</u>	<u>CL</u>	<u>Ca</u>	<u>%</u> <u>SOL</u>	<u>COMMENTS</u>
8/27	Spud	8.34	26	--	--	--	7	--	--	250	120	--	Spud mud
8/28	62'	8.34	26	--	--	--	11	--	--	250	190	--	Water
8/29	830'	8.4	27	5	1	0/2	9	24	2/32	350	80	.8	Gel/Lime/Water
8/30	2305'	8.9	31	7	4	3/5	9	20	2/32	400	80	4	Gel/Lime/Water
8/31	2305'	8.34	26	--	--	--	--	--	--	300	160	--	Water
9/1	3080'	8.4	26	--	--	--	8	--	--	380	180	--	Water
9/2	3920'	8.4	26	--	--	--	--	--	--	380	180	--	Water
9/3	4280'	8.4	26	--	--	--	--	--	--	380	180	--	Water
9/4	5080'	8.5	28	--	--	--	10	--	--	400	60	--	Water/Chem
9/5	5586'	9.2	34	6	9	4/12	12	--	2/32	700	0	5.5	Mud up
9/6	5638'	9.6	35	10	9	5/13	12	21.8	2/32	700	0	8.5	LSND
9/7	5850'	9.6	36	12	12	9/17	11	9.7	2/32	800	20	9	LSND
9/8	5980'	11.2	39	13	17	9/21	12.5	9.3	2/32	800	20	21.5	LSND
9/9	6093'	11.3	43	14	22	13/24	12	9.8	2/32	940	180	22	LSND
9/10	6380'	11.0	46	14	27	14/29	11	11.2	2/32	2100	140	20	Bar/Gel/Chem
9/11	6380'	11.1	45	14	26	14/27	11.5	11.0	2/32	2200	140	20	Bar/Gel/Chem
9/12	6380'												Plug well

FORMATION TOPS

KB = 5826'

<u>FORMATION</u>	<u>SAMPLE</u>	<u>E-LOG</u>	<u>SUBSEA</u>	<u>THICKNESS</u>
PENNSYLVANIAN PERIOD				
Hermosa Group (Honaker Trail Formation)	4950'	4960'	+866	1046'
PARADOX FORMATION				
Upper Ismay Zone	5992'	6006'	-180	115'
Upper Ismay Porosity	6112'	6118'	-292	33'
Hovenweep Shale Zone	6154'	6151'	-325	31'
Lower Ismay Zone	6181'	6182'	-356	42'
Gothic Shale Zone	6228'	6224'	-398	30'
Desert Creek Zone	6256'	6254'	-428	50'
Lower Desert Creek Porosity	6304'	6304'	-478	16'
Chimney Rock Shale Zone	6326'	6320'	-494	26'
Akah Zone	6350'	6346'	-520	31'
Salt	6378'	6377'	-551	
T.D.	6380'	6379'		

STRUCTURAL/STRATIGRAPHIC COMPARISON W/OFFSETS

	R.T. Duncan #1-13 Grynberg Sec. 13-37S-23E San Juan Co., UT			Skyline Oil #2-34 Mustang Sec. 2-37S-23E San Juan Co., UT			MCOR #1-20 Federal Sec. 20-37S-24E San Juan Co., UT		
	Ground Level 5816' K.B. Elev. 5826'			Ground Level 5854' K.B. Elev. 5841'			Ground Level 5649' K.B. Elev. 5662'		
<u>FORMATION TOPS</u>	<u>LOG</u>			<u>LOG</u>			<u>LOG</u>		
	<u>TOP</u>	<u>SUBSEA</u>	<u>h</u>	<u>TOP</u>	<u>SUBSEA</u>	<u>h</u>	<u>TOP</u>	<u>SUBSEA</u>	<u>h</u>
PENNSYLVANIAN PERIOD									
Hermosa Group	4960'	+866	1046	4892'	(+962)	1077			
PARADOX FORMATION									
Upper Ismay Zone	6006'	-180	115	5969'	(-115)	105	5807'	-145	102
Upper Ismay Porosity	6118'	-292	33	6074'	(-220)	28	5909'	-247	79
Hovenweep	6151'	-325	31	6102'	(-248)	18	5988'	-326	29
Lower Ismay	6182'	-356	42	6120'	(-266)	52	6017'	-355	41
Gothic Shale	6224'	-398	30	6172'	(-318)	28	6058'	-396	28
Desert Creek	6254'	-428	50				6086'	-424	54
Lower Desert Creek Porosity	6304'	-478	16	6260'	(-346)	20	6140'	-478	15
Chimney Rock	6320'	-494	26	6280'	(-426)		6155'	-493	
Akah	6346'	-520	31						

LOGS RUN

Dual Induction/SFL with Gamma Ray and S.P.
Base of Surface Casing to Total Depth

Litho-Density/Compensated Neutron with Gamma Ray and Caliper
4800' to Total Depth

Bore Hole Compensated Sonic with Gamma Ray and Caliper
Base of Surface Casing to Total Depth

Cyberlook
5900' to Total Depth

EVALUATION OF LOG QUALITY

All logs are of generally good quality. No hole problems and no logging tool problems existed during logging operations. Logging personnel were very professional and performed their jobs well.

LOG CALCULATIONS

UPPER ISMAY ZONE

<u>DEPTH</u>	<u>ϕ_S</u>	<u>ϕ_N</u>	<u>ϕ_D</u>	<u>AVE ϕ</u>	<u>F</u>	<u>Rt</u>	<u>Rwa</u>	<u>Rw</u>	<u>Ro</u>	<u>Sw %</u>
6128'	.04	.04	.02	.033	900	160	.178	.04	36	47
6130'	.03	.02	.02	.023	1837	225	.123	.04	73.5	57
6132'	.03	.02	.02	.023	1837	175	.095	.04	75.5	65
6140'	.055	.01	.025	.03	1111	160	.014	.04	44.4	53
6142'	.025	.01	.01	.015	4444	175	.039	.04	177.8	100

DESERT CREEK ZONE

6263'	.12	.17	.05	.113	77.9	22	.283	.035	2.72	35
6265'	.115	.12	.05	.095	110.8	22	.199	.035	3.88	42

LOWER DESERT CREEK ZONE

6307'	.10	.15	.07	.107	87.9	17	.193	.035	3.08	43
6308'	.095	.14	.07	.102	96.8	19	.196	.035	3.39	42
6309'	.085	.13	.05	.088	129	19	.147	.035	4.52	49
6310'	.09	.11	.04	.08	156	17	.109	.035	5.47	57

FORMULAS AND ASSUMPTIONS USED IN CALCULATIONS

1. Sonic Porosity, ϕ_S
 - a.
$$\frac{\Delta t - \Delta t_{ma}}{\Delta t_{ma} - \Delta t_f}$$
 where $\Delta t_{ma} = 4.76 \text{ sec/ft}$ and $\Delta t_f = 189.0 \text{ sec/ft}$
 - b. Sonic ϕ valid for clean formations
2. Neutron Porosity, ϕ_N
 - a. Limestone matrix was run for Ismay zones
 - b. Dolomite matrix was run for Desert Creek zones
3. Density Porosity, ϕ_D
 - a.
$$\phi_D = \frac{p_{ma} - p_b}{p_{ma} - p_f}$$
 where $p_{ma} = 2.87$ for Desert Creek
 $p_{ma} = 2.71$ for Ismay zones
 p_b = formation bulk density
 $p_f = 1.0$ fresh mud
4. Average ϕ
 - a. Cross plot N/D and sonic averages
5. Formation Resistivity Factor, F
 - a. $F = 1/\phi^2$ for carbonates
 - b. F is sonic, neutron and density derived
6. True Formation Resistivity, R_t
 - a. R_t assumed to equal to RDLL (valid for little or no invasion, thick beds, and clean formations).
7. Resistivity of Apparent Formation Water, R_{wa}
 - a. $R_{wa} = R_t/F$
 - b. $R_{wa} - R_w$ then $S_w = 100\%$
 - c. Quicklook for hydrocarbon detection
8. Resistivity of Formation Water, R_w
 - a. $R_w = 0.04 \text{ OHMS}$ for Ismay zones
 - b. $R_w = 0.035 \text{ OHMS}$ for Desert Creek zones
9. Resistivity of Formation Wet Resistivity, R_o
 - a. $R_o = (FR_w)$
 - b. $R_o = R_t$ in wet zones
 - c. Quick look for hydrocarbon detection.
10. Water Saturation, S_w
 - a.
$$S_w = \sqrt{\frac{FR_w}{R_t}} \quad \text{or} \quad \sqrt{\frac{R_o}{R_t}}$$

FORWARD TO SAMPLE DESCRIPTIONS

Samples are described based on a personal format which will be provided upon request.

Samples have been lagged to corresponding depths and matched as close as possible to electric log depths.

Sample quality has been noted in parenthesis following each sample description. (1) denotes good samples, (2) denotes fair samples, and (3) denotes poor samples.

- 4500' - 4550' 20% Sandstone: Light gray predominately clear, fine grained to medium grained, predominately unconsolidated, moderately sorted, no shows. (3)
80% Shale: Reddish brown, brick red, reddish orange, blocky to subplaty, silty in part, calcareous, soft to moderately firm.
- 4550' - 4600' 70% Shale: Brick red, reddish orange, brownish red, blocky to scattered splintery, noncalcareous to slightly limy in part, silty in part, subwaxy in part. (3)
20% Siltstone: Red, blocky, slightly sandy in part, calcareous in part, soft to moderately firm.
10% Sandstone: Light pink, white, gray, clear, fine grained to medium grained, unconsolidated grains, subrounded, calcareous, no shows.
- 4600' - 4620' 30% Sandstone: Clear, white, light pink, predominately medium grained unconsolidated, calcareous, no shows. (3)
70% Shale: Predominately reddish orange, blocky to splintery, noncalcareous to calcareous, silty in part.
- 4620' - 4700' 70% Shale: Brick red, reddish orange, dark red, blocky to splintery, scattered calcareous, soft to moderately firm, scattered silty in part. (3)
20% Siltstone: Orange to red, shaly in part, calcareous in part, soft to moderately firm.
10% Sandstone: Clear, light gray, fine to medium grained unconsolidated in part.
- 4700' - 4730' 60% Shale: Brick red, reddish orange, scattered medium gray, blocky, calcareous, silty in part. (3)
20% Sandstone: Clear, light gray, light pink, very fine grained to scattered medium grained, subrounded to subangular, poor to moderately sorted, calcareous.
20% Siltstone: Red, blocky, shaly in part, soft.
- 4730' - 4780' 70% Shale: Medium gray, reddish orange, blocky, calcareous, scattered limy in part, silty in part, soft to moderately firm. (3)
10% Sandstone: Clear, light pink, subrounded to subangular, poorly sorted, scattered unconsolidated.

- 4730' - 4780'
(continued) 10% Siltstone: Red, blocky, shaly in part.
10% Limestone: Light pink, pinkish brown, dense, shaly in part.
- 4780' - 4820' 70% Shale: Red, reddish orange, scattered medium gray, blocky to subsplintery, calcareous, silty in part. (3)
20% Sandstone: Clear, light gray, light pink, fine grained, scattered medium grained, calcareous, scattered silty to slightly shaly in part.
20% Siltstone: Red, soft, blocky, calcareous.
- 4820' - 4860' 60% Shale: Reddish orange, dark red, blocky to splintery, calcareous, silty in part.
20% Siltstone: Red, soft, calcareous, shaly in part.
10% Limestone: Light brown, light pink, dense.
10% Sandstone: White, light gray, clear, very fine grained to fine grained, subangular, poorly sorted, calcareous.
- 4860' - 4890' 20% Sandstone: Light gray, clear, medium gray, very fine grained to medium grained, subangular to subrounded, silty to shaly in part. (3)
60% Shale: Orange, red, scattered gray, blocky to splintery, slightly limy in part, scattered noncalcareous, soft to moderately firm.
20% Siltstone: Red to orange, scattered medium gray, blocky, slightly sandy in part.
- 4890' - 4930' 70% Shale: Reddish orange to gray, blocky to splintery, calcareous to slightly limy in part, silty in part. (3)
10% Limestone: Light gray, light pink, dense, cryptocrystalline.
10% Sandstone: Light gray, clear, fine to medium grained, subrounded, calcareous, silty to shaly in part.
10% Siltstone: Red, blocky, calcareous, shaly in part.
- 4930' - 4950' 40% Limestone: Light brown, creamy pink, dense, argillaceous to slightly shaly in part, moderately firm, scattered sandy in part. (3)
50% Shale: Red, blocky to splintery in part, calcareous to limy in part, soft to moderately firm.
10% Sandstone: Light gray to clear, medium gray, fine grained calcareous, moderately sorted, clay filled.

HERMOSA GROUP (sample top 4950'; E-log 4960')

- 4950' - 5000' 40% Limestone: Light brown, grayish brown, light gray, cryptocrystalline to microcrystalline, scattered slightly shaly in part, scattered fossils. (3)
60% Shale: Dark brown, dark grayish brown, blocky, moderately firm, calcareous in part, slightly limy in part.

- 5000' - 5030' 50% Shale: Dark brownish gray, dark red, blocky, calcareous in part to limy in part. (3)
50% Limestone: Light gray, creamy white, light brown, cryptocrystalline to microcrystalline, shaly in part.
- 5030' - 5050' 60% Shale: Reddish brown, dark reddish brown, medium gray, micaceous in part, blocky to scattered platy in part, soft silty in part. (3)
40% Limestone: Light brown, light gray to creamy white, shaly in part.
- 5050' - 5080' 30% Sandstone: Clear, light gray, silty in part, very fine grained, clay filled, calcareous, slightly to moderately micaceous, subrounded. (3)
60% Shale: Medium to scattered dark gray, dark reddish brown, greenish gray, silty in part, blocky, soft, calcareous to scattered limy, slightly micaceous.
10% Limestone: Gray, light brown, creamy white, dense, cryptocrystalline scattered fossils.
- 5080' - 5120' 50% Shale: Medium to scattered dark gray, dark reddish brown, silty in part, blocky, soft, calcareous to limy in part, scattered micaceous. (3)
40% Limestone: Light brownish gray to creamy white, dense, scattered fossils.
10% Sandstone: Clear, gray, clay filled, tight, slightly micaceous, calcareous.
- 5120' - 5170' 50% Limestone: Light brown, light gray, light grayish brown, scattered creamy white, dense, cryptocrystalline, slightly argillaceous in part, scattered fossils, slightly sandy in part, no visible porosity. (3)
50% Shale: Dark brown to gray, blocky, soft to moderately firm, calcareous to limy in part.
- 5170' - 5200' 70% Shale: Dark brown, gray, scattered dark gray, blocky scattered splintery, soft to scattered firm, calcareous to limy in part. (3)
30% Limestone: Light brownish gray, medium gray to creamy white, cryptocrystalline, slightly argillaceous in part, scattered fossils, dense, no visible porosity, no shows.
- 5200' - 5230' 80% Shale: Dark brown, reddish brown, gray, blocky, soft to moderately firm, calcareous, scattered noncalcareous, limy in part, silty to very silty in part, micaceous in part. (3)
10% Limestone: Light to medium brown, slightly argillaceous in part, no visible porosity.
10% Sandstone: White, light gray to clear, very fine grained to fine grained, subrounded, calcareous, clay filled, tight, micaceous.

- 5230' - 5280' 70% Shale: Dark brown, red, brown, dark gray, blocky to splintery, moderately firm to scattered firm, calcareous to limy in part, silty in part. (3)
30% Limestone: Creamy white, light gray, light brown, dense, cryptocrystalline, argillaceous in part, no visible porosity.
- 5280' - 5320' 70% Shale: Dark brown to medium brown to scattered gray, blocky, soft, scattered moderately firm, calcareous. (3)
20% Limestone: Light grayish brown, dense, cryptocrystalline, argillaceous in part, scattered fossils.
10% Sandstone: Light gray to clear, very fine grained to fine grained, subangular, clay filled, no visible porosity, no shows.
- 5320' - 5330' 60% Limestone: Light grayish brown, light gray to creamy white, dense, argillaceous, scattered fossils, no shows. (3)
40% Shale: Brown, scattered gray, blocky to splintery, soft to moderately firm, calcareous to slightly limy in part.
- 5330' - 5380' 40% Sandstone: Light to medium gray to white, very fine grained to fine grained, trashy, micaceous, subangular to subrounded, calcareous, poorly sorted, clay filled, tight, limy in part. (3)
50% Shale: Dark reddish brown, blocky, calcareous to limy in part.
10% Limestone: Cream white, light gray, slightly sandy in part, dense, scattered fossils.
- 5380' - 5410' 60% Shale: medium gray, reddish brown, blocky to splintery in part, calcareous to slightly limy in part. (3)
40% Limestone: Light gray, light brownish gray, dense, cryptocrystalline, no shows.
- 5410' - 5420' 40% Sandstone: Clear, light gray, trashy, micaceous, very fine grained to fine grained, calcareous, poorly sorted, tight. (3)
50% Shale: Dark reddish brown, blocky, silty to sandy, limy.
10% Limestone: Light brownish gray, microcrystalline, argillaceous, slightly sandy in part.
- 5420' - 5450' 60% Shale: Medium gray to dark brown, blocky, soft to moderately firm, limy in part, silty in part. (3)
40% Limestone: Light brown, light gray, microcrystalline, dense, argillaceous in part, no visible porosity, no shows.

- 5450' - 5470' 50% Shale: Medium to dark gray, blocky to splintery, moderately firm to scattered firm, slightly limy in part. (3)
50% Limestone: Light to medium gray, microcrystalline to cryptocrystalline, slightly sandy in part, no shows, cherty.
- 5470' - 5500' 70% Shale: Gray to dark gray, blocky, calcareous to limy, moderately firm. (3)
30% Limestone: Light gray, light brown, cryptocrystalline to microcrystalline, dense, argillaceous, scattered clear, cherty.
- 5500' - 5540' 60% Limestone: White, light brown to dark brown, cryptocrystalline to microcrystalline, fossils in part, cherty in part. (3)
40% Shale: Light to medium gray, blocky, moderately firm, calcareous to limy.
- 5540' - 5560' 80% Limestone: Light gray, light brown, creamy white, clean to slightly argillaceous in part, cryptocrystalline, no visible porosity, scattered chert, no shows. (3)
20% Shale: Medium to light gray, blocky, calcareous to limy in part, moderately firm.
- 5560' - 5610' 50% Shale: Medium to dark gray, blocky to splintery, moderately firm to firm, calcareous to slightly limy in part. (3)
50% Limestone: Light to medium gray, microcrystalline to cryptocrystalline, argillaceous in part, no visible porosity, scattered clean limy, no shows.
- 5610' - 5640' 80% Shale: Dark gray to black, splintery to blocky, moderately firm to firm, scattered calcareous to non-calcareous, scattered limy in part. (3)
20% Limestone: Light brown, light gray, cryptocrystalline, scattered fossils, dense, argillaceous, no shows.
- 5640' - 5680' 50% Shale: Medium to dark gray, splintery to blocky, moderately firm to soft, slightly calcareous to calcareous. (3)
50% Limestone: Light to medium gray, light to medium brown, dense, clean to slightly argillaceous, fossils, cryptocrystalline, no visible porosity.
- 5680' - 5700' 80% Limestone: Light to medium brown, cryptocrystalline, dense, clean to slightly argillaceous, fossils, scattered chert, traces pyrite, no shows. (3)
20% Shale: Dark gray, dark brown, blocky to splintery, limy, moderately firm.
- 5700' - 5760' 70% Shale: Dark gray to black, splintery to blocky, slightly silty in part, moderately firm, calcareous to slightly limy. (3)

- 5700' - 5760'
(continued) 30% Limestone: Light brownish gray, microcrystalline, slightly argillaceous, no visible porosity, no stain.
- 5760' - 5800' 60% Shale: Dark gray, scattered medium gray to black, blocky to splintery, moderately firm to firm, silty in part, slightly calcareous. (3)
40% Limestone: Light to medium brown, white to light brown, microcrystalline to cryptocrystalline, argillaceous in part, dense.
- 5800' - 5840' 50% Shale: Light to medium gray, scattered dark gray, blocky to splintery, moderately firm to soft, calcareous to limy in part. (3)
50% Limestone: Creamy white to light brown, cryptocrystalline to microcrystalline, slightly argillaceous, scattered fossils, no visible porosity, no shows.
- 5840' - 5850' 70% Shale: Medium to dark gray, splintery, moderately firm, scattered calcareous to limy in part. (3)
30% Limestone: White to light brown, microcrystalline, argillaceous, dense.
- 5850' - 5900' 50% Shale: Dark brownish gray, blocky to splintery, moderately firm to firm, slightly silty in part. (3)
50% Limestone: medium to light brown, cryptocrystalline, slightly argillaceous, scattered chert, no visible porosity, no shows.
- 5900' - 5940' 60% Limestone: Medium brown, tan, gray, cherty, cryptocrystalline to microcrystalline, dense, clean to slightly argillaceous, no visible porosity, no stain, no shows. (3)
40% Shale: Medium to dark gray, splintery to blocky, calcareous.
- 5940' - 5990' 70% Limestone: Light to medium grayish brown, microcrystalline to cryptocrystalline, dense, abundant visible calcite crystals, fractures, oil stain in fractures and around crystals, light green oil on mud tanks, argillaceous in part. (3)
30% Shale: Medium gray, splintery to blocky, moderately firm to firm, slightly limy in part.
- 5990' - 6000' 70% shale: Dark gray, splintery, subplaty, moderately firm, silty in part, limy in part. (3)
30% Limestone: Medium to dark gray, firm, microcrystalline, argillaceous in part, no visible porosity.
- UPPER ISMAY ZONE (sample top 5992'; E-log 6006')
- 6000' - 6010' 80% Limestone: Medium gray to grayish brown, microcrystalline to cryptocrystalline, very argillaceous, no visible porosity. (3)
20% Shale: Dark gray, blocky to splintery, limy in part, moderately firm to soft.

- 6010' - 6050' 50% Limestone: Medium brown, medium to dark gray, cryptocrystalline to microcrystalline, anhydritic in part, tight, slightly argillaceous, no shows. (3)
 40% Shale: Medium to dark gray, medium brownish gray, moderately firm, calcareous.
 10% Anhydrite: White, cream, soft.
- 6050' - 6120' 30% Anhydrite: White, creamy white, soft. (3)
 40% Shale: Light to medium grayish brown, scattered medium to dark gray, blocky, moderately firm, limy in part, scattered silty in part.
 30% Limestone: Light to medium brownish gray, cryptocrystalline, anhydritic in part, argillaceous in part, no visible porosity, no shows.
- 6120' - 6150' 60% Limestone: Light brown, scattered light gray to white, light to medium brown, microcrystalline to micro-sucrosic, dolomitic in part, anhydritic, argillaceous in part, tight, no visible porosity, no stain, no cut. (3)
 40% Shale: Medium to dark gray, blocky to splintery, moderately firm.

HOVENWEEP SHALE (sample top 6154'; E-log 6151')

- 6150' - 6180' 80% Shale: Black, dark gray, splintery to platy, moderately firm, slightly calcareous to limy in part, silty in part, earthy. (2)
 20% Limestone: Light to medium grayish brown, cryptocrystalline, dense, slightly argillaceous and anhydritic, no visible porosity.

LOWER ISMAY ZONE (sample top 6181'; E-log 6182')

- 6180' - 6200' 40% Limestone: Medium to dark grayish brown, microcrystalline to cryptocrystalline, slightly argillaceous, no visible porosity, no stain, no show, anhydritic in part. (2)
 40% Shale: Medium to dark gray, splintery to platy, earthy, calcareous.
 20% Anhydrite: Cream white, soft.
- 6200' - 6210' 30% Anhydrite: White. (2)
 60% Shale: Medium to dark gray, splintery to platy, scattered blocky, soft to moderately firm, calcareous, earthy.
 10% Limestone: Medium to light brown, argillaceous, cryptocrystalline, dolomitic and anhydritic, no visible porosity.
- 6210' - 6220' 50% Limestone: Medium brown, microsucrosic to microcrystalline, dolomitic in part, argillaceous, anhydritic, no shows. (2)
 50% Shale: Medium gray, splintery, soft, calcareous in part.

GOTHIC SHALE (sample top 6228'; E-log 6224')

6220' - 6250' 80% Shale: Black, dark gray, platy to blocky, soft to moderately firm, slightly calcareous, earthy, carbonaceous in part. (2)
20% Limestone: Brownish gray, anhydritic in part, argillaceous in part, microcrystalline to microsucrosic, dense, no shows.

DESERT CREEK (sample top 6256'; E-log 6254')

6250' - 6280' 50% Dolomite: Light to medium brown, sucrosic to granular, tight, dense, anhydritic in part, limy in part, argillaceous in part, dark brown stain, poor visible intercrystalline porosity, no fluorescence, no cut. (2)
40% Shale: Dark gray, black, blocky, soft, calcareous, earthy.
10% Anhydrite: White, soft.

6280' - 6300' 60% Dolomite: Medium brownish gray, dense, anhydritic in part, argillaceous, microcrystalline, no visible porosity.
20% Anhydrite: Creamy white, soft to crystalline. (2)
20% Shale: Dark gray to black, splintery to blocky, soft to moderately firm, earthy.

LOWER DESERT CREEK (sample top 6304'; E-log 6304')

6300' - 6320' 70% Dolomite: Light brown, microsucrosic to sucrosic, limy in part, argillaceous in part, scattered black stain with faint light yellow fluorescence and slow light yellow bleeding cut, scattered anhydritic infilling, poor intercrystalline porosity, tight. (2)
30% Shale: Dark gray, blocky to splintery, soft to scattered moderately firm, slightly calcareous, earthy in part.

CHIMNEY ROCK SHALE (sample top 6326'; E-log 6320')

6320' - 6350' 70% Shale: Black, dark gray, platy to splintery, earthy, soft to moderately firm, calcareous. (2)
30% Dolomite: Dark brown to dark grayish brown, cryptocrystalline to microcrystalline, dense, anhydritic in part, no visible porosity.

AKAH (sample top 6350'; E-log 6346')

6350' - 6370' 60% Dolomite: Medium to dark brown, cryptocrystalline to microcrystalline, dense, slightly argillaceous, slightly anhydritic in part, no visible porosity, no stain, no cut, limy in part. (2)
40% Shale: Medium to dark gray, black, blocky to splintery, earthy, slightly calcareous, anhydritic.

6370' - 6380'

20% Anhydrite: White, soft.

60% Dolomite: Medium to dark brown, dark grayish brown, microcrystalline to cryptocrystalline, argillaceous to slightly shaly in part, moderately firm to soft.

20% Shale: Dark gray to black, platy to splintery, moderately firm to soft, slightly limy in part.

Salt: By interpretation.

SUMMARY

PROSPECT OVERVIEW

The Raymond T. Duncan No. 1-13 Grynberg Federal was drilled to a total depth of 6379' (e-log) as a wildcat to explore a seismic high in the Upper Ismay and Lower Desert Creek Zones of the Pennsylvanian Paradox Formation.

FORMATION SUMMARY

Hermosa Group of the Honaker Trail Formation (5960' - 5964')

This 4 foot interval was highly fractured and consisted of a dark grayish brown to medium brown microcrystalline limestone. Evidence of fractures were present by abundant oil lined calcite crystals and observed calcite filled small fractures in small shale nodules present in the limestone. Bit torque also was present while drilling this interval indicating fractures. A large gas kick also was observed; gas peaked at 1,440 units total gas, increasing from a background of 3 units. Chromatograph breakdown during the peak were 588 units of C₁, 468 units of C₂, 504 units of C₃, 132 units IC₄, 240 units of NC₄, 60 units of C₅ and 60 units of C₆ and traces of C₇. The presence of the heavier gases indicate the existence of oil in this interval. A light green to light goldish yellow oil was observed on top of the mud tanks and reserve pit. The well was shut in to control this gas kick. Mud weight was increased from 9.6 to 11.1 lb/gallon to hold back this zone. This indicates that the fractures are highly pressured (over 3600 psi). The rest of the drilling of this well was drilled with gas cut mud. Trip gas from this interval was over 6000 units and 100 unit increases were noticed from connections. The electric logs also indicate the fractured nature of this interval.

Upper Ismay Zone (6140' - 6144')

This thin limestone was a light brown, microsugrosic, slightly dolomitic, argillaceous tight limestone. A small increase in gas was observed (about 70 units) while drilling this interval. No visible porosity and no fluorescence and cut was observed from examination of samples.

Desert Creek Zone (6261' - 6267')

This tight light grayish brown dolomite was microcrystalline to micro-sugrosic with poor visible intercrystalline porosity and only traces of

Desert Creek Zone (continued)

scattered dark brown stain with no fluorescence and cut. A 90 unit gas increase was noted over background. Argillaceous and scattered anhydrite infilling limited any potential in this interval. The e-logs revealed this zone to be thin and not very clean.

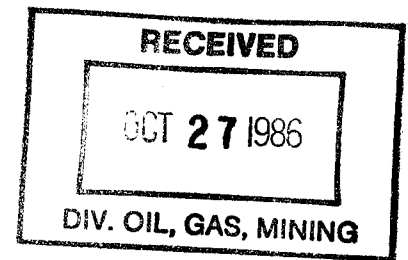
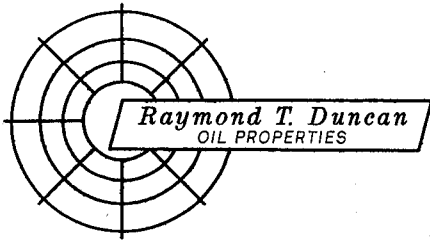
Lower Desert Creek Carbonate (porosity) (6304' - 6309')

The dolomites of this interval were light brown, microsugrosic to sugrosic and were argillaceous to anhydritic with poor intercrystalline porosity. Scattered black dead oil stain was observed with a faint light yellow fluorescence and slow light yellow bleeding cut was observed from examination of samples. A 140 unit gas increase over background was noted (background gas was 65 units). From the electrical logs this tight, thin zone was confirmed.

POST DRILLING COMMENTS

A final examination of all possible zones penetrated through the Paradox Formation (Ismay and Desert Creek) at this location reveals that no significant zones with enough porosity, permeability and hydrocarbons to justify the running of production casing. It is apparent that at this location the well was either on the nose or on the flank of any bioherm mound.

The Lower Hermosa Carbonate Fractured Zone was considered to be too thin to run pipe. If conditions in the industry change economically, this fracture play may become financially feasible in the future. The decision was made to plug the well and abandon the location.



1777 SOUTH HARRISON STREET - PENTHOUSE ONE
TELEPHONE (303) 759-3303 - DENVER, COLORADO 80210

October 23, 1986

State of Utah
Division of Oil, Gas & Mining
4241 State Office Building
Salt Lake City, Utah 84114

Re: Grynberg Fed. No. 1-13
SW NE Sec. 13-37S-23E
San Juan County, Utah

Gentlemen:

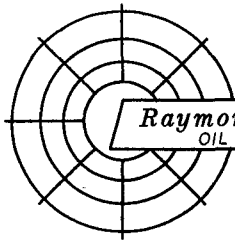
Enclosed for your records is the Geological Report for the above captioned well. I apologize for the delay in providing you with this information.

Should you need further information, please contact me at the above address.

Sincerely,

J. A. Bettridge
Operations Superintendent

KDB
encl.



Raymond T. Duncan
OIL PROPERTIES

1777 SOUTH HARRISON STREET • PENTHOUSE ONE
TELEPHONE (303) 759-3303 • DENVER, COLORADO 80210

RECEIVED
JAN 28 1988

DIVISION OF
OIL, GAS & MINING

January 20, 1988

State of Utah
Division of Oil, Gas & Mining
3 Triad Center, Suite 350
Salt Lake City, Utah 84180

Re: Grynberg Federal No. 1-13
SW NE Sec. 13, T37S, R23E
San Juan County, Utah

Gentlemen:

Enclosed is the Sundry Notice for the Subsequent Report of Abandonment on the above captioned well. The location has been reclaimed and reseeded and is now ready for final inspection.

Please contact me if you have any questions or need additional information.

Very truly yours,

RAYMOND T. DUNCAN

J. A. Bettridge

J. A. Bettridge
Operations Superintendent

JAB:nr
Enclosures

*No approval
required.
- JRB*

STATE OF UTAH
OIL & GAS CONSERVATION COMMISSION

SUBMIT IN TRIPLICATE*
(Other instructions on re-
verse side)

SUNDRY NOTICES AND REPORTS ON WELLS

(Do not use this form for proposals to drill or to deepen or plug back to a different reservoir.
Use "APPLICATION FOR PERMIT—" for such proposals.)

1. OIL WELL <input type="checkbox"/> GAS WELL <input type="checkbox"/> OTHER <input checked="" type="checkbox"/> Dry		5. LEASE DESIGNATION AND SERIAL NO. U-46825 PA
2. NAME OF OPERATOR Raymond T. Duncan		6. IF INDIAN, ALLOTTEE OR TRIBE NAME N/A 020429
3. ADDRESS OF OPERATOR 1777 So. Harrison PH-1, Denver, CO 80210		7. UNIT AGREEMENT NAME N/A
4. LOCATION OF WELL (Report location clearly and in accordance with any State requirements.* See also space 17 below.) At surface SW NE 2580' FNL & 2610' FEL		8. FARM OR LEASE NAME Grynberg Federal
14. PERMIT NO. 43-037-31273		9. WELL NO. 1-13
15. ELEVATIONS (Show whether DF, RT, GR, etc.) 5816' GR, 5826' KB		10. FIELD AND POOL, OR WILDCAT Wildcat
		11. SEC., T., R., M., OR BLK. AND SURVEY OR AREA 13-37S-23E
		12. COUNTY OR PARISH San Juan
		13. STATE UT

16. Check Appropriate Box To Indicate Nature of Notice, Report, or Other Data

NOTICE OF INTENTION TO:

TEST WATER SHUT-OFF <input type="checkbox"/>	PULL OR ALTER CASING <input type="checkbox"/>
FRACTURE TREAT <input type="checkbox"/>	MULTIPLE COMPLETE <input type="checkbox"/>
SHOOT OR ACIDIZE <input type="checkbox"/>	ABANDON* <input type="checkbox"/>
REPAIR WELL <input type="checkbox"/>	CHANGE PLANS <input type="checkbox"/>
(Other) <input type="checkbox"/>	

SUBSEQUENT REPORT OF:

WATER SHUT-OFF <input type="checkbox"/>	REPAIRING WELL <input type="checkbox"/>
FRACTURE TREATMENT <input type="checkbox"/>	ALTERING CASING <input type="checkbox"/>
SHOOTING OR ACIDIZING <input type="checkbox"/>	ABANDONMENT* <input checked="" type="checkbox"/>
(Other) <input type="checkbox"/>	

(NOTE: Report results of multiple completion on Well Completion or Recompletion Report and Log form.)

17. DESCRIBE PROPOSED OR COMPLETED OPERATIONS (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work. If well is directionally drilled, give subsurface locations and measured and true vertical depths for all markers and zones pertinent to this work.)*

Subject well was plugged and abandoned in accordance with the Notice of Intent to Abandon. Pit and location have been reclaimed and seeded. Location is ready for final inspection.

18. I hereby certify that the foregoing is true and correct

SIGNED

J. A. Bettridge

(This space for Federal or State office use)

TITLE Operations Superintendent

DATE Jan. 20, 1988

APPROVED BY

CONDITIONS OF APPROVAL, IF ANY:

TITLE

DATE